

THE AUTOMOBILE

How to Increase Life of Your Tires.

Tires form one of the greatest single items of expense in motorcar upkeep. They are, therefore, worthy of the most intelligent attention on the part of the automobile owner.

Tire conservation has a great deal to do with medium-weight car design. Their balanced construction, even distribution of right weight, afford unusual mileage from each shoe and tube.

And they are equipped at the start with high-quality tires. They are built to stand long, hard wear. Like every other essential part of the car, they are especially selected for the function they perform.

But by practicing proper care you can obtain even greater mileage. You can cut tire costs to a minimum. In the first place, tires should always be kept properly inflated. Twenty pounds pressure to the inch is a good rule to follow. For instance, in the 3 1/2-inch tires, seventy pounds pressure should be maintained; in 4-inch tires, eighty pounds.

Too much pressure creates an overstrain from within as well as without. Aside from discomfort to the passengers, it results in greater wear and tear from each obstacle encountered. Too little inflation causes the side wall of the tire—its weakest part—to bend back and forth until it cracks and breaks. The correct amount of air insures distribution—uniform resistance at all points.

In driving, keep your eyes on the road and your mind on the controls. Guard against sudden stops, quick starts and skidding. Avoid severe jolts and sharp obstructions.

You know these things cause blow-outs, also stone bruises that do not always show on the surface. The shock of them often breaks an inner layer of the fabric. By preventing these things you will escape most of the common tire troubles. When they do occur, tread cuts and sand boils should be quickly cleaned out and repaired.

Otherwise they will expose the inner fabric to air and contact with the road. Dirt and oil will collect and enlarge them. Small bruises may be temporarily healed with mastic. Grease, oil and acids should be removed from tires at once by means of a cloth moistened in gasoline.

It is important to the life of a tire that you should keep wheels in alignment. If the wheel is out of line the whole tire is distorted. Strain at all points results. Moreover, a wobbly wheel causes friction from several directions instead of the direction provided for.

The greatest wear takes place on the tread—it is built to withstand it. The sides of a tire have only a thin coating of rubber to protect the fabric. Care should be taken to guard them.

Be sure that nothing on the machine scrapes the tires as they revolve. Save the side walls by keeping out of ruts in the road. Above all, do not

drive in car tracks—they cut all the way around the tire.

You have experienced the need of spare tires in an emergency. Protect them. Carry the tubes in a bag. Provide covering for shoes.

Be careful in applying new tubes. Be sure they fit. In flate them slightly beforehand and see that they are snugly in place.

After the First Trip.

After the first trip in your car make a careful inspection and note that everything is as it should be. The engine parts should be given special attention, for the slightest defect in them will result in trouble. Make your inspections frequently for the first thousand miles then you can relax your vigilance a bit.

Make a thorough study of the instruction book. Look at the lubrication chart and familiarize yourself with the location of every grease cup and oil hole, then see that they are kept properly filled. This will insure you against worn parts or scored bearings and, incidentally, allow you to learn the lubrication system. When an automobile is built, the engine has been run but little, and every part is fitted tight to make it snug after the roughness has worn off. Consequently the car is very stiff and will not show much speed until these parts wear in. So do not exceed 25 miles an hour until your speedometer registers 1,000 miles. By so doing each part will "find itself" and you will be perfectly safe in exceeding 30 miles an hour. If you force a car before it has run 1,000 miles the result may total a noisy engine and premature repairs.

Drain off the oil every 500 miles and replace it with fresh. You will be surprised at the quantity of grit and dirt that comes from the crankcase. The bearings and pistons throw off small particles of metal which, if you do not remove with the old oil, will work into the bearings and cause serious results.

Perhaps your motor will show a tendency to overheat when new. Do not permit this to worry you, for it is merely the friction of newness. Give it plenty of oil and water and soon this trouble will disappear.

Every now and then the new car should be jacked up, the wheels shaken and the looseness removed. As the bearings become accustomed to their work the need for adjustment will go away as do the other ills.

Be careful of your gasoline adjustment on the dash. Do not leave it "rich" any longer than is necessary, for this allows an extra amount of gasoline to get into the engine base, which will thin the oil.

The body cleaning should be done very carefully for the first month or so. Use a simple flow of water, without spray or force, so as not to mar the finish. The longer you drive without unnecessary cleaning the harder the varnish will become.

Be Kind to Your Neck.

If only people would be kind to their necks there would be far less trouble in the world.

Tight collars are very bad for the health. They obstruct the flow of blood to the head, and increase the flow of money to the laundry. The man who invented stiff collars ought to have been shot at dawn. But very likely there was no need. If he didn't choke, he probably fell down in a fit, and by the time they had sawn six inches off his collar he was dead.

Watch, as you walk along the street, what a number of people wear spectacles. Eye specialists are of opinion that stiff collars have much to do with our low standard of eyesight.

Therefore, if you are a wise person you will be good to your neck. Give it room. Don't wear a collar that's too small for you.

To be disappointed in love is a cruel blow, but to be disappointed in marriage is a continuous performance.

Norwegian Government experimenters have succeeded in producing a bread containing 20 per cent of fish.

Canada's Coal Situation

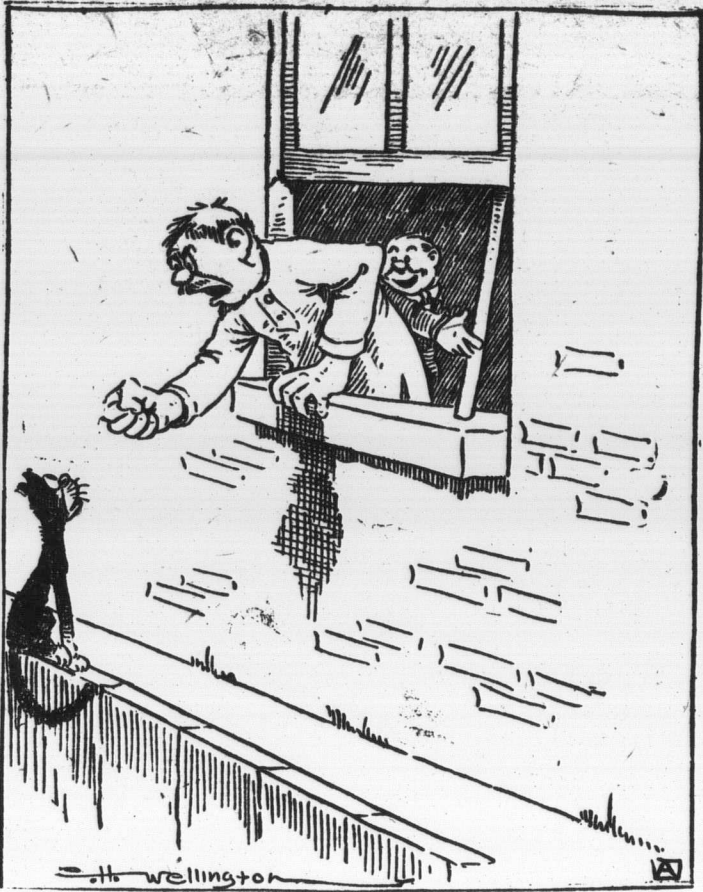
Canada created a record for coal production in 1920, when she produced 16,968,658 short tons, as against 13,919,096 short tons in the preceding year, or an increase of 21.9 per cent. The previous high mark was set in 1913, when the output totalled 15,532,878 short tons. Exports increased to 2,558,223 tons, as compared with 2,070,050, but this was counter-balanced by the increase in imports from the United States from 16,982,773 to 20,815,596. The total value of production is estimated at about \$7,000,000.

With only one exception, that of Saskatchewan, every province of the Dominion exhibited an increase in production during the year over the 1919 figures. A particularly interesting feature of the year was the wrestling from Nova Scotia by Alberta of the honor of premier producer, the Western province leading the Eastern by nearly four per cent. Alberta produced 41 per cent of the total output, or roughly 7,000,000 tons; Nova Scotia,

27.8 per cent, or 6,500,000; British Columbia, 18.3 per cent, or 2,550,000 tons; Saskatchewan, 1.9 per cent, or 330,000 tons; and New Brunswick, 1 per cent, or 170,000 tons. The reduction in Saskatchewan's output is attributed to the greatly increased use of Alberta coal in Manitoba and that province.

A both interesting and gratifying feature of the coal situation in 1920 was the increased use of native coal, especially in the Prairie Provinces. The war, which cut down shipments of anthracite from the United States to Manitoba, gave Alberta her opportunity to introduce her product, on the qualities of which there was a lack of education. She was not slow to force her way, and is maintaining the position assumed with every indication of increasing her market. This is shown very clearly in the shipments of coal from Alberta eastward, which in 1920 totalled about 500,000 tons as compared with approximately 350,000 tons in 1919.

—and the worst is yet to come



Filming 100 Tons of Molten Steel

A most remarkable moving picture was recently taken by the United States Bureau of Mines. In reproducing the various processes in the manufacture of iron and steel sheets at the plant of a large American company it was desired to show not only each mechanical step but the actual making as well as the handling of the molten steel or iron.

When pig iron and scrap steel are subjected to a high temperature in an open hearth furnace, using producer gas or oil as fuel, the iron and metals gradually melt until an immense liquid bath, like a small lake or pond, is formed, which boils like water at a temperature of over 2,800 degrees Fahrenheit. The actual melting and boiling of the metal is interesting as seen through blue glasses, but a close up view is not possible because of the heat.

The promoters of the moving pictures referred to conceived the idea that the value of the picture would be decidedly enhanced if it were possible to take a moving picture of the actual melting and boiling of the steel. In this case they had to deal with an open hearth furnace holding 100 tons or 200,000 pounds of metal melting down to finally boiling. The result of their efforts was the production of a picture of this process, which has never been accomplished before.

A regular moving picture camera was so fitted up that it was water-jacketed—that is, enclosed in a water-cooled fireproof box. This was placed just inside the furnace. The operator of the camera wore an asbestos suit and stood just outside or almost in the door of the seething furnace. The attempt was eminently successful, and a picture has resulted which is a revelation to behold. Not only is the hard metal, the pig iron and the steel, seen gradually melting, together with the formation of the slag which floats on top, but the actual boiling of this 100 tons of molten steel is seen in all its phases. It is a beautiful sight and an instructive one. The metal boils like water on a stove, the bubbles growing gradually larger and larger.

While no actual scientific phenomena not already known were revealed by this achievement it is confessed that with the use of the speed camera, involving the slowing down of operations and with probable improvements in the camera itself, new facts of vital value to industry may some time result from the application of the moving picture to metallurgical operations. From an educational point of view the making of such pictures is of almost inestimable value.

WIRELESS SERVICE IN THE DOMINION

SECOND TO NONE IN THE WORLD.

Being Successfully Used Not Only in Navigation but in Forest and Fisheries.

Wireless is coming to be the world's great transmitter of news and method of rapid communication, and a nation desirous of keeping pace with world progress in all respects must pay continuous attention to bettering their systems of this most modern method of long distance conveying. Canada has not been slow in recognizing the importance of wireless in her economic existence, in her shipping and trade, even in her forests and fisheries and in the bearing of this important factor on the hole of future Dominion development, and she has kept well to the fore in this regard.

The wireless service on the Great Lakes, in the Gulf of St. Lawrence, and on the Atlantic and Pacific Coasts is second to none in the world in the opinion of navigators. The Canadian trans-Atlantic wireless service, in competition with the cables, which has been in operation for some thirteen years, has been very successful, and is still improving in speed and accuracy. Authorities consider that no series of wireless-direction-finding stations have given such help and satisfaction to mariners as that established by the Canadian Government on the Atlantic Coast.

Scope and Object of Service.

Government wireless in Canada comes under the Radiotelegraph Branch of the Naval Department which, however, whilst owning the stations, has let several by contract, for operation, to the Marconi Wireless Telegraph Company of Canada. The primary object of the Government service is to provide facilities for communication with ships at sea and to assist in their navigation and the safeguarding of the lives of the people they carry. Incidentally, the service undertakes the handling of commercial messages with ships and also provides means of communication with

points not reached by existing land telegraphs, an instance of the latter being the Queen Charlotte Islands in British Columbia.

The total number of stations in operation in the Dominion and on ships registered therein in 1920 was 563. Of these, twenty-seven are located on the east coast, and have ranges of from 100 to 1,500 nautical miles; eight are in Ontario, on the Great Lakes, having ranges of 350 nautical miles each; ten in British Columbia on the west coast have ranges of from 150 to 350 miles; two public commercial stations in Cape Breton and one in New Brunswick have ranges of 3,000 miles and 2,500 miles—the third being for reception only; two in Hudson Bay have a range of 750 miles each; eleven private commercial stations with ranges of from 100 to 200 miles; and there are thirty-nine Canadian Government steamers equipped with wireless, capable of transmitting from 100 to 400 miles.

With the exception of the small station at Pictou, Nova Scotia, all of the forty-seven coast stations in the Dominion are owned by the Government. Those on the Pacific Coast, Hudson Bay, Barrington Passage, Nova Scotia, and the three direction-finding stations on the east coast, sixteen stations in all, are operated directly by the Department of Naval Service. The stations on the Great Lakes and the remaining stations on the east coast, thirty-one in all, whilst owned by the Government, are operated by the Marconi Wireless Telegraph Company of Canada, under contract, and under the terms of which the Company receives a total annual subsidy of \$89,200 and retains all tolls collected on messages except on Government messages, which are handled free.

The Government-owned and operated station at Barrington Passage, Nova Scotia, maintains a commercial service with Bermuda. The Marconi station at Glace Bay has a continuous trans-Atlantic commercial service with Clifden, in Ireland, and, as far as actual handling of traffic is concerned, is considered one of the best trans-Atlantic circuits. The use of the Hudson Bay stations is in suspense until the policy respecting the Hudson Bay Railway is decided upon. The stations on the British Columbia coast are increasingly in touch with Pacific bound steamers.

Six Million Words Transmitted. A total of 241,933 messages, con-

What Makes Great Men "Great?"

A sunbeam falling upon a sheet of paper will make it warm, but it will never bring the paper to such a heat that it begins to smoulder.

If, however, we bring all the rays of the sunbeam to a single point by means of a magnifying glass, we can produce heat great enough to set the paper on fire.

All that we have done is to focus or concentrate these rays, with the result that we obtain vastly increased power. It is just the same with the mind.

If we can concentrate all our energies upon the work that is in hand, we shall do it far more easily and quickly. Concentration demands a great effort, and men who have this power would soon be worn out if they had not also the gift of resting their minds at times by throwing off entirely their cares and worries.

Really great men have the power of focusing their minds upon the subject that demands attention at the moment; but when the work is done you will find them playing golf as if they had not a care in the world, or laughing at an amusing play.

Those who are always concentrating become absent-minded; they are quite unable to take a mental holiday when necessary, with the result that they lack vigor and freshness.

Allied with concentration is will-power. Many people imagine that the strong man is a kind of cinema hero who bends others to his will by the steady glance of his flashing eye. Such men do not exist in real life! If they did they would be unpleasant creatures whose unpopularity would soon

bring about their downfall.

The secret of the strong-willed man is that he uses his will to make himself do the things he ought to do. We are all naturally lazy, putting off everything that we possibly can till the to-morrow that never comes. The strong man uses his will to overcome his natural laziness; once he has succeeded in this he is able to make others do as he wishes, simply because he can make up their minds for them.

Concentration can be developed by anyone who will take the necessary pains. Here is a simple method. If you are reading a "dry" book, you will find every now and then that your attention is wandering; you have read a paragraph or a page, and after doing so you have not the least idea of what it was about. When you reach that point, stop. Lay aside your book and think of something else. Do not go back to it until you feel sure that you can give it your whole attention.

Do not attempt too much at first; concentrate on quite a short passage, then take a rest. In this way you will soon find that you can give your whole mind to a subject for longer and longer periods. Half an hour's concentration will produce more result than a whole day of rambling, inattentive work.

Will-power and concentration run hand in hand, for concentration demands an effort of will, and there can be no will without concentration. In these two allied qualities lies the whole secret of success and happiness in life.

The habit of dwelling on difficulties and magnifying them weakens the character and paralyzes the initiative in such a way as to hinder one from ever daring to undertake great things. The man who sees the obstacles more clearly than anything else is not the man to attempt to do any great thing.

operate systems, and last year the Shawinigan Water and Power Company at Shawinigan Falls, Quebec, received a license to operate a station there to communicate with their head office at Montreal, a distance of eighty-two miles.

The innovation of the Canadian Pacific Ocean Services in starting a Canadian news service by wireless to their liners in the North Atlantic has created intense interest in Canadian, United States, and British shipping circles, as bringing Canada into that select circle of nations which gossip by wireless. Not only is the news of the Canadian markets, Dominion progress, and general Canadian happenings received by the Company's passenger liners at sea, but wireless stations situated elsewhere pick up the messages, and Canadian news vies in the importance of its appeal with that of Great Britain and the United States.

A review of the wireless situation in Canada gives gratifying evidence of the Dominion's progress with the times, and of its recognition of the necessity of keeping abreast in the extension of the uses of this great invention. It is being successfully used in connection with Dominion fisheries and forests, and will undoubtedly in the future be utilized to a greater extent in bringing the rich regions of the hinterland into touch with the governmental and industrial centres.

Canada's fire loss is very heavy—\$27,000,000 in 1920, or \$3.42 per capita on an eight million population—one of the heaviest of any country, partly due to carelessness.

Marten and Fisher Ranching

The accession of Canada to her logical place among fur markets of the world, by reason of her prominence among producers, has resulted in an impetus and a greater devotion of interest to other phases of the fur industry, and in none, perhaps, so much as the domestic rearing of fur-bearing animals. Success has been achieved, covering many years, in fox ranching and other branches of fur farming, the absolute feasibility of the venture in Canada proven, and all that had been accomplished justified confident hope of expansion. Thus has come about a widening of the field, not only as regards the establishment of ranches but in the variety of animals so reared. Canada is the natural habitat of nearly every species of marketable fur-bearing animal, and has the finest climatic conditions for producing the richest, glossiest, and heaviest furs. The trapping of fur-bearing animals in Canada is a profitable industry, but it must be borne in mind that the domestic rancher has the advantage over the trapper, inasmuch as he is able to kill his animals when the furs are prime, and thus realize the best prices.

There may be a very profitable future in store for pioneers in the breeding of fisher and marten, a field which as yet has scarcely been entered. As the best fisher pelts are selling for \$100 each, whilst marten may bring \$50, there is every inducement to enter into the breeding of these wild cousins. Up to the present, it has been found somewhat difficult to suc-

cessfully breed these animals in captivity, due, it is thought, to lack of provision of facilities for exercise.

A successful beginning, however, to a marten ranch is to be found at Louis Creek, British Columbia, where G. H. DeLey, as reported by the Commission of Conservation, has succeeded in raising two generations of the animals. From a pair of wild martens, he raised a litter of three, two females and one male. When one year old, the young females gave birth to two and four young respectively, and all of them have been successfully raised to maturity.

Success in the rearing of marten and fisher in the past would seem to have been largely, if not wholly, defeated by lack of general knowledge of wild animal breeding, which resulted in a failure to provide conditions and environment corresponding to the natural haunts. Large runs must be provided, with obstacles and hiding places such as hollow logs, and, in general, the animals permitted to live their natural life. Unlike foxes, marten do not thrive so well when the wild state is left behind, and they should not be induced to become tame.

Fisher and marten raising is in the experimental stage, through which the breeding of other wild animals had to pass before prosperous issue was reached. There is no reason to doubt but that the causes which have hitherto resulted in failure will be overcome, and the domestic breeding of these profitable little animals be placed on the same successful footing as that of other fur-bearers in Canada.