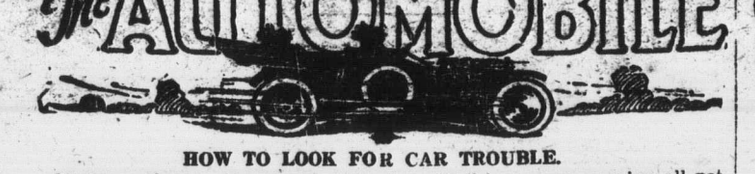
The AUTOMOBILE



HOW TO LOOK FOR CAR TROUBLE.

Under ordinary circumstances the man or woman who goes out looking for trouble has no difficulty in finding it. But this general rule finds an exception in the automobilist. The driver of a motor car probably has his share of troubles, but he often has a mess of a time locating them. When he starts out in search of the cause of a bit of trouble, it seems to be a very demon for eluding the searcher.

Trouble will hide in a tiny piece of carbon lodged under a valve or between spark plugs, or in a wire that has jarred loose, or in an interrupter point, a piston ring, a gas pipe or what not. The motorist learns early in the game that the most insignificant things are tremendously important at times.

Yet most troubles incident to operating a car may really be located quite quickly if the driver goes after them in a systematic fashion instead of wandering aimlessly about the engine and other parts, as is often the custom of the amateur owner. The hardest thing a driver has to do when the engine stops or acts up is to divest himself of the idea that he knows precisely what the trouble is. Often he is sure he can fix the trouble in just about one minute, and he putters around a long time before he makes up his mind that possibly after all his cocksureness is not well founded.

The best way to proceed in hunting trouble is to start without any preconceived ideas as to what the trouble may be and follow a system which is in reality a process of elimination. Remember that to start a gasoline engine three things are necessary—gasoline, compression and a spark at the right time. Remember, also, that to keep it running it is necessary to have water for cooling, unless it be an air-cooled engine, and oil for lubrication.

What To Do First.

If the engine stops on the road and pressing the starter pedal fails to start it, or if one or two cylinders miss fire, the first thing to do is to get the crank out of the tool kit and crank over the engine. If, with the gears in neutral, the engine cranks over hard, it indicates a lack of lubricating oil, or a lack of water, which has allowed the engine to reach a temperature where the lubricant fails to perform its work. If the engine turns over fairly easy, it is not necessary to look for oil or water trouble.

The next test should be for compression. If the driver is not experienced and is unable to tell simply by the resistance of the starting crank whether each cylinder has compression, he should open all the pet-cocks except on one cylinder and turn the crank two revolutions, noting if there is a resistance of one-quarter of a revolution in the complete turns. Compression occurs only on the one stroke of the piston in the four-stroke cycle. Each cylinder should be tested in a similar manner, opening all pet-cocks except on the cylinder being tested. See if the compression is practically equal in all cylinders.

If one cylinder has very weak or no compression the trouble is apt to be in the exhaust valve. Examine the push rod to see if there is clearance between it and the valve when the valve is supposed to be closed. If there is, the valve must be lifted out and the valve and seat inspected for carbon. Sometimes a piece of carbon will lodge on the valve seat and, due to the hammering of the valve, will become fastened to the valve or seat. For temporary repair it can generally be scraped off with a knife, and the valve can be ground in on reaching the garage.

Valve Head May Break.

If the trouble is not in the exhaust valve it might be in the inlet valve. In some types of engines the valve head may break off and get into the cylinder and when the piston comes up punch a hole in the piston head. A pet-cock may be loose so that it will jar open sufficiently to affect the compression and so cause the cylinder to miss fire. These troubles are usually confined to one cylinder and not to the whole engine.

The gasoline should be inspected next. Is there any gasoline in the bowl of the carburetor? Is there gasoline in the tank? Is the shut-off valve in the line leading to the carburetor open? Does the manifold leak?

Do not adjust the carburetor. If the engine has been running it is practically certain that the carburetor is not out of adjustment. Inspect the intake pipe or manifold. Then put a tablespoonful of gasoline in each cylinder and crank over the engine. If this runs the engine for a few revolutions the trouble is probably in the gasoline system and leaves but the spray nozzle, which may have dirt lodged in it, or the auxiliary air valve stuck as the remaining cause of trouble.

The ignition should be inspected next. Test for a spark by taking the wire off any plug, crank engine with switch on. Spark should jump to plug. Are batteries run down? Does the vibrator (if any) buzz. Is timer clean? Does timer rotor make good contact? Are any wires loose, burned, wet, broken, or short-circuited? Are spark plugs clean and are points one-fiftieth of an inch apart? Does magneto armature revolve? Is safety spark gap clean? Are interrupter points clean and adjusted right? Do all brushes make good contact? Is distributor clean? Is distributor rotor loose, broken or making poor contact? Check magneto wires.

If the trouble has still evaded the searcher after all these performances, better take it for granted that it will not be found by further investigation, except with the help of an expert from some service station.

THE ARCTIC NORTH OF THE DOMINION

NOT THE BARREN WASTE MANY PICTURE IT.

Region of Latent Wealth and Potentiality Awaiting the Coming of the Settler.

In the lamentable ignorance which exists in many other countries regarding Canada, her wealth and resources, and particularly on her climate, hosts of strangers who know not the great land might be inclined to include under the appellation the greater part, if not the whole, of the Dominion, unheeding the fact that there must be a summer of blazing glory behind its consistent world successes in wheat growing, a bracing spring and fall to commence and terminate a lengthy agricultural season. There are doubtless, too, misconceptions on the mighty Yukon territory where for many years a cilization has existed, modern in its every phase, and progressing along the same lines as areas further south.

But there is an Arctic north to Canada, by which is indicated that territory adjacent to, and inside of, the Arctic circle, a region where only superficial exploration has been carried on and for this reason is hedged about with a thousand misconceptions and false impressions. It is indeed a region of cold winters, but also one of exdeedingly bright warm summers. It is not the barren waste popular opinion has pictured it, but one of luxuriant verdure and extensive vegetation. It has a wealth of natural resources and other potentialities, a decided future asset of the Dominion. International interest being particularly centered on this northern territory of Canada, it is now appropriate to look into its features.

Nothing has aroused such general and widespread interest in Canada for a considerable length of time as the discovery, last fall, of oil in the Mackenzie River basin, within the Arctic circle. The capital of many countries is being invested in that area; investors and prospectors are flocking thither by every means of transportation; railway and river steamer services are projected; mushroom settlements are springing up all over its expanse. There is every reason to suppose that the strike is not merely an isolated flow, indications all over the area being of the same favorable nature, and there is every confidence that the many companies carrying out prospecting and drilling will meet with the same success.

The MacKenzie River Basin.

Knowledge of the mineral resources of the Mackenzie River basin is very imperfect and limited, but sufficient exploration of a specific nature has been undertaken to have encountered many deposits of lignite coal and iron ore, which for exploitation are dependent upon transportation facilities and agricultural development. Lignite of fair quality occurs in the banks of the Mackenzie at Fort Norman in a bed about five feet thick, and iron ore has been found on the Gravel River about four miles above Fort Norman. Another occurrence was observed further north on the Mackenzie about thirty miles south of the Arctic circle: iron ore occurs in the Bear Mountain section in company with deposits of lignate coal.

It may sound absurd to speak of agriculture here, but one might suggest to memory the sceptics who said that wheat would never be grown in the Canadian North-West. The amazing fact might also be pointed out that as far back as 1876 wheat grown by Roderick Mackenzie, brother of the great explorer, at Fort Chipewyan, which is to all intents and purposes within the Arctic circle, carried off the first prize at the Centennial Exposition at Philadelphia. This was in an era prior to the plains of the south coming into prominence as cereal producers and bearing off most of the prizes for the North American continent.

Though fur, at the present time, constitutes practically the sole commercial product of this region, there is every reason to suppose that at some future time, when the millions of acres to the south of it, as yet unproductive, have been brought under the plough, this section will make a name for itself in agriculture. There is no reason why it should not. At present development of an agricultural nature is limited to the gardens of the fur-trading posts located about 160 miles apart along the Mackenzie. These gardens, however, demonstrate that potatoes and various other vegetables can be grown successfully as far north as the Arctic circle. The surprisingly luxuriant growth that wild grasses attain around the trading posts suggests the possible future development of stock raising. The excellent herd of cattle maintained by the Roman Catholic Mission at Fort Smith for many years, illustrates in the clearest manner the value of the wild grasses for grazing and the adaptability of the country to running of stock.

A Future Most Promising.

It requires but little imagination in the face of recent undertakings to foretell the future of the great tundras of the Canadian Arctic north as the greatest meat producing region of the world which will make the palatable and nutritious meats of the cariboo, reindeer and musk-oxen familiar to the dining tables of the globe. Three islands in the waters of the North-West Territories: Southampton, Mansel, and Goat's, each with an abundance of fodder, have been set aside by the government as perpetual breeding grounds for reindeer and musk-oxen. Stefannson, the famous Canadian explorer, has formed a company with British capital and secured a thirty-year grazing lease on the south half of Baffin's land for the same purpose. The North American Reindeer Company has a ranch of 73,750 square miles north of the Churchill River to graze reindeer and cariboo upon for commercial purposes, whilst another large concession of the Northland has been secured by the Hudson's Bay Reindeer Company, a commercial organization with the same aims.

The bleak Canadian north framed in perpetual ice and snow, the monotonous barren tundras of the Arctic circle are fictitious features of long harbored traditions having no substance in fact. This region is one of latent wealth and potentiality, largely unproductive as yet on account of lack of exploitation, but fast being penetrated and forced to utility. Canada has large areas to the south yet awaiting settlement and development and when these are producing to their full capacity, the rich Canadian Arctic regions will come into their own.

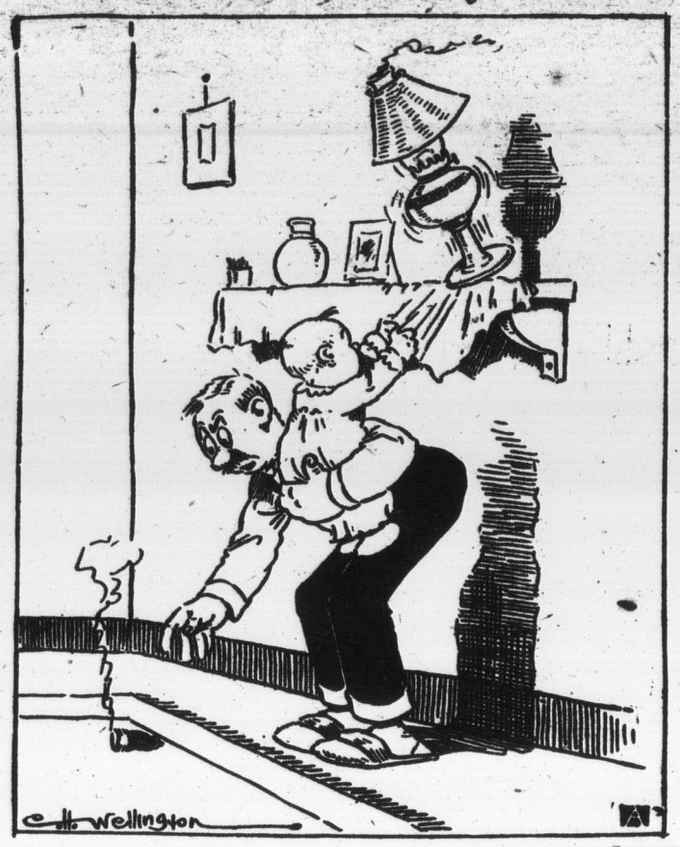
Better Farming Train Educates the West.

The "Better Farming Train" sent out through all parts of Saskatchewan this summer has disseminated agricultural education in a new and attractive way. There were eight coaches. Two were equipped with motor picture apparatus. The train stopped in scores of small towns and on sidings, give exhibitions and farmers and their families crowded to the shows. The pictures taken under agricultural experts of the provincial government showed every phase of farm work scientifically accomplished. The graphic demonstrations of the motion pictures taught farmers more than many lectures.

There were carloads also of pure bred cattle, sheep and hogs. The dairy exhibit was especially interesting to settlers in the diversified farming region along the Canadian National Railways where stock raising is becoming a rival of grain growing and dairying is rapidly developing into an important industry.

Most of the pure-bred bulls carried by the train were sold to farmers. More than 4,800 farmers attended the demonstrations at the various stops. The lectures and the exhibits were furnished by the Saskatchewan governmen'

——and the worst is yet to come



MANY ARTICLES PRODUCED FROM COAL

ONE OF NATURE'S MOST PRECIOUS GIFTS.

A Substitute for Sugar, the Aniline Dyes, Powerful Disinfectants and Medicines.

In addition to what coal does for us by providing light and power, it gives from within itself vast numbers of the things which are most useful in our lives.

To see how these are obtained we must pay a visit to the gas works, where coal goes through the various processes which turn it into gas and coke. Two other things—ammonia and tar—are produced when this is done. We all know the uses of the first; but for a long time tar was regarded as a by-product of little value. It would make road surfaces waterproof, and it would preserve wood from rotting; but there its uses seemed to end.

Now we know better. By distilling tar we obtain, first of all, carbolic acid, the most powerful of all disinfectants. Tar also gives benzole and benzoline, which can be used amongst other things for driving motor-cars or for cleaning clothes. After them comes naphthaline, which most of us know best in the form of moth balls.

When sugar was scarce, a substitute was found by the aid of coal-tar, from which we get saccharine, that remarkable substance which is three hundred times sweeter than sugar. Most people then, have eaten coal in the form of saccharine!

Famous T.N.T. of Wartime.

We needed a new high explosive for our big shells during the war, for we could not obtain in sufficient quantities the materials for making lyddite. Coal supplied the want by giving us toluol, from which was made the famous T.N.T.

Perhaps, most wonderful of all, we get colors of surpassing beauty from coal. The only shade that occurs to you when you think of coal or tar is sombre black. Yet it is from tar that we obtain aniline, which is the basis of most of the dyes now used in commerce. When aniline dyes were first discovered they were crude, harsh tints which gave little pleasure to the eye. Now they have been developed to such an extent that they give us colors of a soft delicate beauty.

Oil may possibly supplant coal for heating purposes and for the driving of machinery. But coal will always hold its own in other ways, for oil has little to give us in the way of by-products. When we burn coal we use it in the most wasteful way possible, obtaining from it less than a fifth of the heat which it is capable of giving out, and making no use at all of the colors, the sweetness, the disinfectants, or the healing medicines that are hidden within it.

These Terrible Questionaires.

Registration Officer (to spinster)—"Your name, please."

Spinster—Matilda Brown."

Registration Officer—"Age?"

Miss Brown—"Have the Misses Hill, who live next door, given you their ages?"

Registration Officer—"No."

Miss Brown—"Well, then, I'm the same age as they."

Registration Officer—"That will do." Proceeding to fill in all particulars, he muttered: "Miss Brown, as old as the hills."

The Bible is, on an average, translated into about ten new languages every year.

A fire-alarm bell which is set ringing by smoke alone is the latest fire-fighting appliance.

BRITAIN'S LATEST BIGGEST LEVIATHAN

TRANSCENDS SEVEN WONDERS OF ATIQUITY.

Stupendous Figures, Difficult to Realize, Used in Describing Largest of Ships.

The modern leviathan steamship, travelling majestically at express speed over the oceans, transporting, dining and lodging a whole villageful of travellers, in defiance of the hurricanes and tides, and yet at the same time obedient to the pressing of a button on the bridge, transcends all the seven wonders put together of the world of antiquity.

John Ruskin said one of many wise things when he declared the steamship to be the greatest triumph which the genius of man has evolved.

The Pyramids of Egypt, the Parthenon of Athens, were built by brains and hands; the great steamship needs for its completion the agency of a thousand inventors, many human hands, and a thousand machines.

The Pyramids of Egypt remain stationary, the last word in the wonders of antiquity; but the steamship never ends in its wonderful development. It goes from year to year multiplying in size, power, efficiency, and luxury of travelling. Its newest creations make pigmies of all past standards of greatness.

Another wonderful milestone in the endless progress of its development from its tiny ancestors will be covered shortly at Hambury, when there will be launched a new leviathan which will once more assume the title, gained by so many of its predecessors, "The Greatest Ship in the World."

Germany's Reparation.

This ship, which is to be handed over to Great Britain as one of the penalties for going to war, will be named the Majestic by its future owners, the White Star Company.

It is fitting that the ship should become the possession of this great line, inasmuch as it has been the pioneer in Britain of all the great monsters—the Aquitania excepted.

The Majestic is to have a length of 950 ft. This is very nearly one-fifth of a mile, or one-fourth the height of Ben Nevis, the highest mountain in Great Britain.

If we compare the Majestic with some of her historic ancestors, the rapidity of development is seen to be enormous.

The Majestic will just be twenty-two times the length of the Comet—the first steamship launched in Great Britain in the year 1812. In tonnage the Majestic would make 2,000 comets.

Her length will be four hundred feet greater than the longest ship of only forty years ago—the City of Rome. She will exceed the length of the Lusitania and her great Tyne-built sister, the Mauretania, by 200 ft. The Majestic will be 70 ft. longer than the ship which at present is distinguished by the title, "The Greatest Ship in the World"—the Aquitania, built on the Clyde in 1912.

This inheritor of the Aquitania's title will be double the length of the battleship Dreadnought, one and a half times the length of the famous Queen Elizabeth, and 50 ft. bigger than the world's greatest warship, the Hood.

It is instructive to recall that after the failure of the Great Eastern, built on the Thames seventy years ago, which had a length of 600 ft., it was considered architecturally impossible to build a successful vessel having a length of 600 ft.

He Walked to the States!

The reason for this was given that the longest waves of the Atlantic were 600 ft. in length, and that any ship of this or greater length would in a storm get herself in between two waves and have either a very bad time or break her back.

This idea prevailed for forty years, and it was not until the Campania was built, in 1893, that the "fatal" 600 ft. length was again exceeded.

The truth was the Great Eastern was before her days. Her engines were not powerful enough to drive her through the trough of a turbulent sea. To-day the 885 ft. Aquitania drives her way unconcernedly through the wildest storms the Atlantic can whip up.

Nor does the new Majestic, with her 960 ft. length, promise to be the last word in the building of leviathans. Before the outbreak of the Great War, a designer had prepared the sketch of a ship to be 1,500 ft. in length and 150 ft. in width.

All that retards the probable construction in the near future of such a monster is the limited resources of the world's harbors and waterways to give accommodation; but harbor authorities are moving rapidly, and this barrier may ere long be removed.

Perhaps in the long distant future we may see the evolution of a monster that would justify the application to it of the phrase employed by General Pershing to the American shipbuilders during the submarine menace of the war—"Build a steel bridge aross the Atlantic."

Or, if one chose to walk the length of such a projected ship, might this story, attributed to an Irish emigrant, become applicable.

Pat found himself assailed on arrival at New York for his ticket. On the way across, the ship being overcrowded, he had found no sleeping-berth, and had paced the decks most of the time.

"Sure, and what do ye want a ticket from me for?" he asked, with a touch of snappishness. "Haven't I walked the whole blessed way across?"

Deadly War Gases Changed to Perfume

Washington.—The deadly poison gas developed by the Chemical Warfare Service has been turned to the most peaceful of peace time service, it is learned. The fumes which devastated whole countrysides in the world war will hereafter be transformed into delicate perfumes to scent milady's boudoir.

Experiments completed by the Chemical Warfare Service have developed from the deadly phosgen gas, a violent scent that they assert is more delicate and more lasting than the original woodland article. Benzyl acetate, another of the war gas products, has proved the source of a scent as fragrant as the jasmine itself.

A Battle With An Octopus.

Capt. Johnson, a Canadian diver, was at work on the wreck of a fruit ship which had gone ashore on a coral reef near Ruatan, Honduras. A new leak had developed, and it was necessary to stop it at once, although the hour was 4 in the afternoon. Capt. Johnson called his assistants, and they anchored the diver's boat with the apparatus. On his way down Johnson noticed the rare beauty of the translucent tropical waters and the lovely color of the coral and the thousands of fish swimming about.

As he was approaching the point where the work was to be done a long, dark arm shot across the face glass of his helmet. He had been in tropical waters before and knew the sign. It was the octopus—the devilfish—feared by all divers. He gave the danger signal and was pulled up.

At the surface he considered the situation. The ship was leaking badly and could not be safely left thus all night. He called for a heavy harpoon and cut the handle, making a weapon about three feet long. Armed with this, he went down again to fight the octopus and stop the leak.

Slowly he approached the spot where the octopus was hidden under the bilge of the vessel. As he approached the creature moved from the under side of the vessel, gathering itself for the attack.

There were but four or five feet between the coral reef on which the vessel had grounded and her side at this point, and Johnson settled himself there for the battle. It was not slow in coming. The creature extended one of its long arms. Johnson gave a quick thrust with his harpoon, but the devilfish was quicker than he and snatched away the arm.

Again the creature struck, and this time it touched Johnson on the hip. On the instant it lost its arm, severed by a blow from the harpoon.

Then the fight began in earnest. The devilfish tried to envelop the man in its many tentacles and the diver kept slashing with the harpoon. He inflicted wounds enough to disconcert the creature and prevent it from enwrapping him, but for some time none of the wounds were serious.

At last, just as the creature had come to alarmingly close quarters, he managed to drive his harpoon into the body. When badly injured the cuttlefish discharges a great quantity of dye, which colors the water a jet black. Instantly Johnson found himself in a volume of ink. He gave the signal and was pulled up.

It took some time for the dye to clear away so that anything could be seen in the water. Then Johnson went down again. He did not have to renew the battle. The octopus was dead.

Ever Hear of a "Lowerator"?

The "lowerator" is a new contrivance, which has an important advantage over the elevator, inasmuch as it requires neither operator nor mechanical power. It is for the rapid handling of merchandise in factories and warehouses, and already has been installed in a number of large manufacturing plants and wholesale grocery establishments.

The device works on an endless chain, the weight of descending merchandise furnishing the motive power. It carries a series of platforms, each of which is a row of strong steel rods extended outward in a horizontal plane. A barrel and a box, let us say, are placed on one of the platforms at the sixth floor. Their weight causes them to descend at a rate controlled by a centrifugal governor to the ground floor, where the steel rods, passing like fingers through an inclined grating, discharge upon the latter the box and the barrel. The barrel and the box thereupon roll down to the bottom of the inclined grating, which serves the purpose of a chute, and are ready to be loaded upon hand trucks or otherwise dealt with.

There are enough platforms strung along the endless chain to allow two or more for each story, so that they are at all times available on every floor of the building.