The Automobile

FREQUENT STEERING GEAR INSPECTION.

Some failure in the proper functioning of the steering apparatus—this is frequently reported as the cause of serious automobile accidents. On account of this situation manufacturers have concentrated the best engineering skill available in an effort to perfect a reliable steering gear. They have done their work so well that some owners take it for granted no responsibility is left to them. They forget that the most perfect mechanism must have good care if one is to expect it to function effectively day after day.

In order to make steering easy and to give the necessary strength coupled with the required flexibility the front wheels of an automobile are given certain peculiarities. At the lower end of the shaft on which the hand-steering wheel is located there is a gear. This is very often of the worm type, although other types are sometimes employed. This gearing makes it possible to swing the front wheels with very little effort on the part of the driver. At the same time it makes it necessary for great pressure to be exerted on the front wheels to move the seering or hand wheel.

Such an arrangement gives the driver easy control of the direction in which he desires his car to move. The same principle is demonstrated when a man with a crowbar raises an object many times his own weight for a short distance.

There is an arm from this steering gear which connects through a drag link to a steering knuckle upon which one of the front wheels is mounted. The other front wheel is made to move in unison with the first through means of a tie rod connected to its steering knuckle. These knuckle joints are necessarily points of weakness as compared with a solid axle. Therefore it is necessary to provide some means of giving strength.

DISTRIBUTION OF WEIGHT.

It is a well known fact that if the front wheels were placed in a perfectly perpendicular position considerable leverage would be exterted on the steering knuckle pins. This would not only make for weak construction, but would also cause a great resistance to the turning movement that is incident to the steering. To overcome these faults the front wheels are given what is termed undergather, that is, the distance between them at the point where they touch the ground is less than at their tops.

This method of constructing a car causes the weight of the vehicle to bear directly on a line with the steering knuckle pins. Consequently, no leverage is exerted. It can readily be seen that this undergather would result in excessive wear on the tires if both wheels were pointed straight ahead, or, in other words, if they were set parallel. To prevent this excessive wear the wheels are given what is called foregather, which means that they are slightly closer together at the front edge than at the rear. While this difference is only about three-eighths of an inch, it is very important that the front wheels toe in that much. Of course, this does not apply to the rear wheels, which in practically all cases, are directly parallel.

In addition to this foregather and undergather, the steering knuckle pins are given a slight rake so as to produce a castor effect to the front wheels. This rake consists in placing the steering knuckle pins so that they will be further toward the rear at the top than they are at the bottom. The result of this engineering project when steering is that the centre of turning of the steering knuckle is a little ahead of the point of contact where the tire touches the road. This is done so that the drag incident to pushing the wheel along the road is back of the centre of turning. The result is that the wheels will always point directly forward unless interfered with.

The principle of this action is the same as that which can be observed in a castor on a bed. It is also the same principle whereby one is able to ride a bicycle without placing the hands on the handle bars. Consequently, if the bars between the two wheels should become disconnected, straight ahead steering and even slight turns can be made through one wheel attached to the steering gear. The other front wheel simply trails along.

STEERING MECHANISM BORED.

Another peculiarity in the steering mechanism is worthy of consideration. The tie-bar, which connects the two front wheels, is attached at either end to the arms that form part of the steering knuckle. These arms, instead of being parallel and thus making the tie-rod the same length as the distance between the steering knuckle pins, are set at an angle, which makes the tie rods shorter than this distance. The result is that when the car is turned, say, to the right, the right hand wheel is swung more than the left hand wheel. Each wheel, therefore, follows closely into proper arc. The reverse is true when turning to the left.

Many motorists do not realize their tremendously important obligation to keep the steering apparatus well lubricated and have it regularly inspected to see that the pins are kept tight and that the wheels do not get too much out of alignment. A pin might drop out when going down a steep hill, or when running at high speed. A friend recently took his car to a service station to be looked over, supposing it was all right, but wanting to be sure. He found out that his steering apparatus would have hardly held out for another five miles without a breakdown, one that might quite possibly have had serious consequences.

Then there is extra wear on tires when wheels are not properly set, and there is, of course, great possibility of disaster when anything goes wrong to the steering parts of an automobile. This is a part of the machine that needs careful and frequent inspection.

Princess Mary of England is shown with her youngest child, Gerald David, and her elder son, George Hubert. The two are beautiful children and are said to be the pride of their grandfather, King George.

EDISON SHOWED EARLY GENIUS

CONTINUALLY EXPERIMENTING AS A CHILD.

Sold Papers on Trains to Buy Chemical Apparatus and Books to Aid Studies.

Although Edison's mother was a teacher and her influence over him powerful and lasting, all the regular scholastic instruction he enjoyed was three months at the public school at Port Huron. He never was a mathematician, but with his original philosophy he reasoned: "I can always hire some mathematicians, but they can't hire me."

He experimented before he could read, and earned money while he worked and educated himself.

When six years old he saw a goose sitting on her eggs—and noted the results. Soon after this observation Edison was missing, and after a prolonged search was found in the barn sitting on a nest of his own construction filled with goose eggs and hens' eggs!

Another experiment of his a few years later, when he was about ten years old, surely betrays the inquisitiveness of the scientific mind. He induced a lad to swallow large quantities of Seidlitz powder in the firm belief that the gas generated would enable him to fly.

Read Whole Section.

He sold papers on trains, not because his people were poor, but because it enabled him to buy chemical apparatus and materials and to purchase books, magazines and newspapers to further his studies. His method of reading was as distinct from others as day from night. We are told that when he, as a boy, gained access to a library he would boldly attack a whole section and read book after book, irrespective of subject.

In place of the great and costly equipment that some men have been privileged to use in their training, Edison's equipment was made by himself. He gleaned the town for bottles, spent his earnings in filling them with chemicals, and labelled them one and all—two hundred odd bottles—"Poison," irrespective of their contents, to prevent others interfering with them.

His first laboratory was in his mother's cellar, and he had to use all his powers of persuasion for it to be permitted to stay there. His second laboratory was the disused smoker, disused because unventilated, on the train on which he sold papers.

His Deafness.

Here one of the calamities of his young life was the upsetting of some phosphorus because of the lurching of the train. This accident set the train on fire and he and his belongings were bundled off the train at a wayside station. It was on this occasion that he received so sound a box on his ears by the conductor that his hearing was permanently damaged. But Edison has always taken this hurt philosophically.

It was while Edison was a newsboy that he became interested in electricity. He had no frictional machine, so he used the family cat. The chief objection was that the cat, lacking Edison's enthusiasm for science, objected to the violent rubbing process and could run faster than Edison.

First Triumph.

Edison's first triumph as an inventor was his invention of the stock ticker, which netted him $40,000. He had anticipated asking from $3,000 to $5,000, but asked General Lefferts to make an offer. When $40,000 was propcsed Edison said it "caused me to be as near fainting as I ever got. I was afraid he would hear my heart beat."

This money enabled Edison definitely to start his spectacular career as an inventor and much of it was spent on his now famous inventions, the automatic, duplex and quadruplex telegraph.

Jay Gould paid $30,000 for his interest in the quadruplex telegraph. This money was again spent in experimenting. From his work on the telephone he got his "telephone money," $100,000, for his carbon transmitter.

Spent By Degrees.

To tell this interesting story in Edison's own words, when he was offered the $100,000 he said: "All right. It is yours on one condition and that is you do not pay me all at once, but pay me at the rate of $6,000 a year for seventeen years (the life of the patent). My ambition was four times too much for my business capacity and I knew that I would soon spend this money experimenting if I got it all at once, so I fixed it that I could not. I saved seventeen years of worry by this stroke."

Edison spent all his money on experimenting and part of it gave the phonograph to the world.

Contrary to common belief, the phonograph did not owe its inception to Edison's picking his finger with a pint connected to a telephone diaphragm, but was the product of pure reasoning, the deduction being made from his experimenting with an automatic telegraph which embossed dots and dashes on a strip of paper.—John R. Hewitt, In General Electric Review.

Snapshots of Sounds.

A new invention of Professor Fournier d'Albe has made it possible to photograph sounds. Professor d'Albe is the inventor of the apparatus by which a blind man can read a book, the printed letters reflecting light on to a selenium cell, which produces sounds by electricity, so that the person really reads by sound.

The new instrument is called a tonoscope. It consists of a trumpet of which the end is horizontal; over the end is stretched a sheet of thin rubber, on which is a drop of mercury.

The light from an electric lamp is reflected from the mercury on to a photographic plate, and any sound spoken or sung into the trumpet makes the mercury vibrate, a pattern of the broken reflections being produced on the plate.

These patterns are quite distinctive. The note B flat gives a different pattern from the note F; in fact, the drop of mercury follows every vibration of music sung or played into the trumpet, so that a moving band of photographic film would record voice or music as a series of different patterns.

We thus have a new instrument for the study of speech and sound, which may pave the way to fresh knowledge and perhaps find many good uses.

Modern Way.

Isabel, aged nine, had just been told the story of Daniel in the lion's den.

Then mother asked: "And what do you think Daniel did the very first thing after he was saved from the lions?"

Without much hesitation, Isabel replied:—

"Why, he must have telephoned home to his wife to tell her he was all right."

Homes.

When I was young and walked the way
Of moor and mead and stone,
I never had a little house
That I could call my own.

I used to dream of gables then,
And floors in place of sod,
Long twilights when our camp fire made
A smoke trail up to God.

They envy me my mansion now
With walls so brave and high;
And I can only envy you,
Whose house is all of sky.

The years have taught what anxious youth
Was all unconscious of—
That brick and mortar make a house
But homes are built of love.

—Helen Frazee-Bower.

The Earliest Pen.

Among the recent discoveries at Kish is a great treasure in the shape of the oldest known pen. Professor Langdon, director of the Weld-Brundell and Field Museum Archeological Expedition, who was delighted at finding this bone stylus for writing cuneiform, says that many scholars had vainly tried to reconstruct the instrument.

This stylus is a triumph of simplicity. It is a bone, six inches long, with a triangular cross-section and pared ends. After a little practice Professor Langdon was able to make cuneiform inscriptions on clay with fair rapidity.

Professor Langdon considers that the mound twenty miles southeast of Nippur may be identified as the site of the city of Isin. Isin was the capital of a dynasty which ruled over a great part of Babylonia after that of Ur from about 2280 B.C. to about 2050 B.C.

Man Overboard!

Lifebuoys are to be equipped with self-igniting water lights, so that in the case of an accident at night the victim can see the lifebuoy, and swim to it.

A copper cylinder is inserted in the lifebuoy containing calcium carbide and calcium phosphide. When the calcium phosphide beccomes wet, a small flame is produced which ignites the stream of acetylene. The light burns with an intensity of 150 candles for forty-five minutes.

Wounded war veterans at Christie Hospital, Toronto, were not overlooked in the voting when the citizens of Ontario were asked to decide between the retention of the O.T.A. or government control of liquor.

SUPPLYING CANADA'S TABLE

Development of Natural Resources Closely Associated With Provision of the Nation's Food Supply.

Three meals per day for the 8,775,853 people in Canada in 1921 would mean 26,327,559 meals daily, or 9,609,458,035 yearly.

What a quantity of foodstuffs is required to supply these meals, and what a variety must be provided.

Where it all comes from, and the interests represented in its collection and distribution, would make a most interesting story, says the Natural Resources Intelligence Service of the Department of the Interior. The object of this article, however, is to direct attention to the effect of the development of our natural resorces upon the provision of our food supply—the means whereby it reaches our tables, and what natural resources enter into its preparation.

Canada's chief food supply, of course, comes from the farm, consequently it is upon the development of Canada's greatest natural resource—the land—that our people depend for sustenance. Agriculture supplies us with not only our bread and butter, but our meat and vegetables, our dairy and poultry supplies and our fruits.

Of the total wheat crop of 399,786,000 bushels in 1923, 170,104,000 bushels was consumed in Canada. How much of this was converted into flour is not as yet known, but in 1922 there was 81,413,649 bushels milled, from which was produced 17,833,131 barrels of flour. Of this flour 8,663,078 barrels was consumed in Canada, slightly less than one barrel for each person.

Of the 491,239,000 bushels of oats grown in 1923, there was consumed in Canada 467,678,000 bushels. The quantity of oats used for human food in 1922 was 11,191,617 bushels, which was converted into 145,912,814 pounds of rolled oats or oatmeal, of which 109,220,512 pounds was used in Canada.

Cornmeal, also, was used to the extent of 51,302,602 pounds, while 2,659,910 pounds of rye flour, 5,631,225 pounds of buckwheat flour, 4,041,053 pounds of barley and 90,433,000 bushels of potatoes contributed to Canada's table supplies. Farm and ranch animals provided 1,391,342,492 pounds of meat, together with 230,507,322 pounds of butter, 21,272,216 pounds of cheese, and enormous quantities of milk and cream.

How dependent Canada is upon natural conditions, as they pertain to precipitation and temperature, is evidenced in the wheat crops of 1921 and 1922. The increase in production in the latter year, notwithstanding that there was less acreage sown to wheat, averaged five bushels per acre, or a total of 104,507,500 bushels—the difference being more than enough to provide all of Canada's requirements for flour making.

While Canadians are not great fish quantities are required to maintain our tables. Salmon, lobsters, herring, cod, halibut and many other varieties are available, and of recent years a number of species heretofore not regarded as edible are being made use of.

Table and dairy salt produced in Canada in 1923 amounted to 41,274 tons and common salt to 35,758 tons. Minerals also enter into the provision of our meals in the form of table cutlery, culinary utensils, stoves, etc., while to a large extent coal, coal oil, natural and artificial gas, and other mineral products supply the necessary fuel.

The power used in the manufacture of our flour and meals amounted to 95,315 horsepower. Herein enters another of Canada's important natural resources. Of this total power 25,105 horsepower was developed by hydraulic turbines and water-wheels, while 53,365 horsepower was provided by electric motors, practically all supplied with current from hydro-electric power developments. Natural and artificial gas used for milling amounted to 334,958,000 cubic feet, while 38,236 tons of lignite as well as other coal, in addition to large quantities of other fuels, including 12,599 cords of wood, were used.

The development of Canada's forest resources, second only in importance to her lands, has a very direct bearing upon the provision of foodstuffs to the country's table. Containers are necessary for distribution, and of these there are made annually approximately 860,000 apple barrels, 182,000 sugar and flour barrels, 2,800,000 butter and cheese boxes, 7,400,000 baskets and crates, 1,200,000 berry boxes and 13,000,000 boxes and packing cases, a large proportion of the latter being used for food supplies. In addition there are millions of cartons, paper bags, and other food containers made of paper and boxboard, the product of raw materials obtained from Canadian forests, required in distribution of our food-stuffs.

It can readily be seen that, while to the land and sea must credit be given for the provision of the raw materials entering into our food supply, each of our natural resources enters intimately into its preparation and distribution.

Most of 'em Haven't.

"These European monarchs can't dictate to a soul now."

"That's right—some of 'em haven't

Pianist Decorated by Belgian King.

During the recent sojourn of Ignace Jan Paderewski in Brussels, the pianist and statesman was decorated by Albert, King of the Belgians, with the Order of Leopold, cacrrying with it the rank of Grand Commander. The conferring of this honor followed soon after the pianist's recital in that city. The decoration is the highest gift Belgium can bestow. The king accompanied the decoration with his photograph bearing this inscription: "To Poderewski the ligerator of Poland and the incomparable artist. Albert.

At the recital, which took place in the Royal Theatre of the Monnaie, Mme. Paderewski sat in the royal box on the King's right and to the left of the Crown Prince. It is said to have been the first time a civilian has been thus honored. The Queen arose when Paderewski appeared upon the stage, thus giving the signal for the audience to do likewise.

During the stay of Paderewski and his wife in Brussels they lived at the King's palace and took their meals "en famille" at the royal table.

Too Much Cow.

A well-known writer who has a country home, recently married a musical comedy star who had previously lived only in the bigger cities. They were spending their honeymoon at his country place, within motoring distance of the city.

The second day of their stay the author, wanting to give his bride the best of everything, decided to buy a cow so that they might get their own fresh milk.

So they jumped in the car and motored over to a neighboring farm, where there was a cow for sale. The animal was led out by its owner, who proudly proclaimed the fine stock she came from, and ended up by telling the newlyweds that the cow gave ten quarts of milk a day.

The bride gasped—then called her husband to one side and whispered: "Arthur, ten quarts of milk is more than we will use; we don't need such a big cow. Get a calf!"

Berlin Babies.

Every new baby born in Berlin, says a dispatch, is to receive from the municipality a savings account of three gold marks. The purpose of the plan is to increase the birth rate of Greater Berlin, which is now below normal. The savings account will be made out in the name of the baby itself and will draw interest. The money may be withdrawn only when the child reaches the age of fourteen. In other German cities where the birth rate is below normal similar steps are to be taken. And this in a country already overcrowded.

Saved Expense.

A Scot went to a solicitor, laid a question before him, and asked whether he would undertake the case.

"Certainly," said the latter. "We are sure to win."

"So you really think it's a good case?"

'Most decidedly, my dear sir. I am prepared to guarantee that you will secure a favorable verdict."

"Ah, weel, I'm much obleeged to ye, but I dinna think I'll go tae law this time, for, ye see, the case I've just laid before ye is my opponent's."

Guiltly Conscience.

A man bought six pounds of sugar and found it adulterated with sand. The next day he had inserted in the local paper a notice reading thus:

"Notice.—I bought six pounds of sugar from a grocer in this village. From it I have taken one pound of sand. If the grocer will send me six pounds of sugar I will not expose him."

Next day five six-pound packages of sugar were left at the man's house, there being just five grocers in the village.

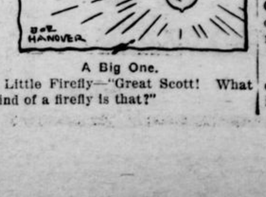
Waste of Time.

Bobby was sent by his father on an errand to an elderly relative who placed great stress upon manners. Upon his return his father questioned him as to his reception.

" 'Tain't no use to wri.e any more letters to him, pa. He can't see to read them. He's blind."

"Blind!"

"Yes. He asked me twice where my hat was, and I had it on my head all the time."



A Big One.

Little Firefly—"Great Scott! What kind of a firefly is that?"

The Busy Man.

There is a difference between a busy man and a business man. They may be merged in the same individual. But there are very busy men who get little business done. They run about in circles; they talk with their mouths; there is a noble noise about them, and an atmosphere of tension in which the thermometer rises to fever heat. In the meantime, some cool and quiet person away from the violent sound and the vivid scene may be getting the real work done. The apparently active one is the window-dresser, the show-piece, the figure-head. There may be a certain decorative usefulness in having him about. But he should not be mistaken for the driving power of production.

The business man puts the vital energy at his command into the day's work, not into frantic and vain gyrations. When a plan to which much toil and thought was given expires in his hands he does not waste time in long and mournful funeral exercises. He never was much of a hand at applying the balm of a foolish and weakly sentimental optimism; but he never yet gave into the quavering despair of the faint-hearted who said "No use." So he gathers what is left and builds thereon, though it be chaff and rubble, till he can sink a firm and deep foundation.

The merely busy man has no plan and goes from one sudden flash of impulse to the next with a headlong rush as aimless as the flight of insects. He despises the careful, thoughtful methodism of the plodder. There is in that slow, cautious way, no brilliancy, no inspiration. On the other hand, the buiness man possesses himself of the cloth before he cuts the coat, has the site and the building fund in hand ere he orders the re-enforced concrete and thinks through to the end of years instead of from hour to hour. The busy man has no time for anything; the business man gets things done because he is precise, punctual, faithful in his appointments as in his plighted word.

Natural Resources Bulletin.

Canada's winters are one of her great natural resources. The winters that prevail over the greater portion of Canada lock up for practically the entire period from harvest to seeding time the fertility present in the soil. The plant food that has been converted into available farms during the preceding summer and autumn and which is left over after the season's growth is retained for the next season's crop. The frost holds tight within its grasp untold values in plant food. In regions where winter conditions are absent this roluble plant food is lost by leaching and must be replaced largely by artificial fertilizer. The Canadian winter must therefore be regarded as an agricultural asset of no mean value.

Anyone who gives thought to the effect of the bracing winter atmosphere upon the health of the people must recognize its value in the rearing of a vigorous and active populace. Canadians are proud of their winter sports, skating, hockey, skiing and tobogganing, which make the blood course rapidly through the veins and bring the bloom to the cheeks of the younger people, while those of more mature years find their winter recreation in curling. Canadians notwithstanding that others may think differently, do not hibernate when winter comes.

Canadian winter sports are a distinct asset and are proving an attraction to many tourists, who come to enjoy with us our winter climate and take part in our winter activities and to renew the energies depleted through residence in countries where the recuperating winter climate is absent.

The Value of Travel.

"Travel," says William McFee in the Bookman, replying to a young gent'eman who has six months' leave for happy vagabondage, "is expensive only in so far as it renders you immune from the difficulties and peculiarities of foreign places. It is expensive because it carries you in the environment to which you are accustomed.

And so, if you are prepared to forego those trivial accessories of modern life, all the comforts and conveniences which threaten to abolish the local characteristics of our modern world, you need not pay very much for your passage.

"And it is a shrewd criticism of the basic value of money, that the cheaper you do it the better it will avail you in the future."

An Unexpected Contribution.

The Children's Aid Society in one of our western towns received a contribution of ten dollars in a curious way. A lady living in New Orleans received a parcel from a friend and the wrapper was a Canadian newspaper. Never having been in Canada the lady smoothed out the paper and read the various items until she came to one which told of the good work of the Children's Aid Society and its need of money. Without delay she wrote to the Secretary enclosing a Postal Order for ten dollars.—J. J. Kelso.

More than fifty homesteads were taken up through the Dominion Land Office at Edmonton during the month of September, by new settlers coming into Alberta.

While some people are saying "It can't be done," they are constantly being surprised by somebody doing it.