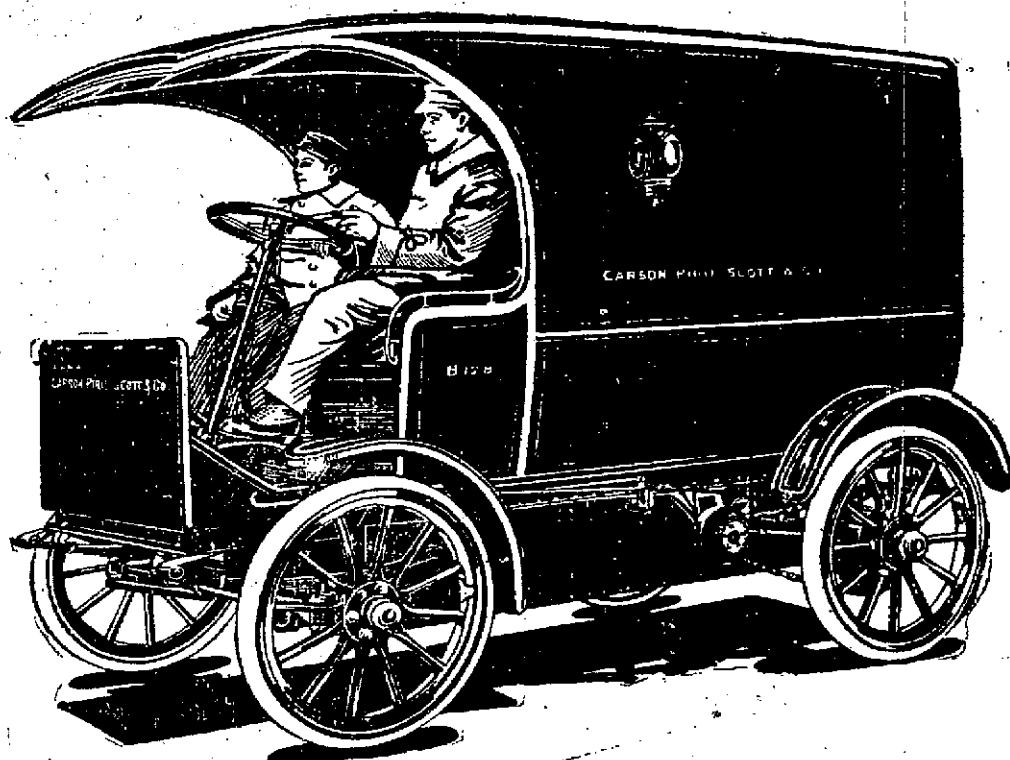


What we told you a year ago about the Edison Battery we have proved to be a fact

**Forty below zero or 100°
in the shade has no terrors for the
Detroit Electric and the Thomas
A. Edison Battery.**

With the mercury standing at 40 below zero in Winnipeg last week, all Detroit Electric pleasure cars and commercial vehicles were on the streets giving their usual satisfactory service, although traffic in general was at a standstill. Think of it! The cold was so intense that even telegraph wires were snapped. At the same time Detroit Electric cars were giving equally good service in Sunny Southern California.

You can get this wonderful battery in the Detroit Electric. We have the exclusive right to use this great invention of Edison's in electric pleasure cars.



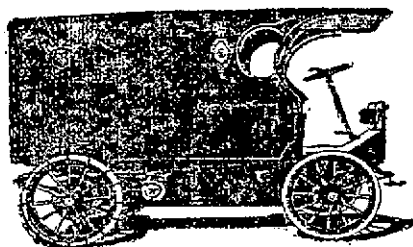
This means that the high grade construction of the Detroit Electric, its motor, its "Chainless" Direct Shaft Drive and control system meet the requirements of the tremendous capacity of the Edison Battery and Mr. Edison's ideal of what an electric car should be.

Two years ago we endorsed the Thomas A. Edison nickel and steel battery. Before doing so, we tested it thoroughly in Detroit Electric Cars. Mr. Edison had already perfected this new invention which involved seven years of "inspiration and perspiration," a series of over fifty thousand experiments, the design of special manufacturing machinery and the expenditure of over two and one-half million dollars.

Remember the Edison Battery is made of nickel and steel. This battery is not a beautiful theory of chemical reaction. It is a commercial proposition that nine years of constant use has proven thoroughly practical under all conditions.

The Edison Battery is practically indestructible. So far as anyone can prophecy, it will never wear out. All it needs is an occasional renewal of solution. There is no renewal or washing of elements. The batteries can be overcharged, or completely discharged and left standing indefinitely without injury.

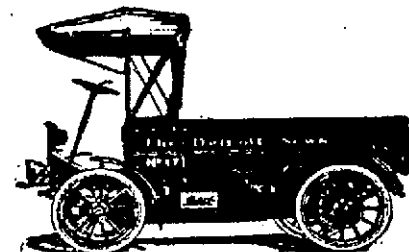
Leading Business Houses and Merchants of Winnipeg Who Have Adopted the Detroit Electric Commercial Trucks Equipped With Edison Batteries—



WINNIPEG PAINT AND GLASS CO.
A. MACDONALD GROCERY CO.
JOHN LESLIE FURNITURE CO.
G. F. STEPHENS PAINT AND GLASS CO.



MATHEW PEEBLES (ROYAL MAIL SERVICE)
McLAREN HOTEL (McLAREN BROS., PROP.)
CANADIAN NORTHERN EXPRESS CO.
CALGARY PAINT & GLASS CO., CALGARY, ALTA.



Experience has proven that we were right in our original announcement two years ago that this battery would not only hold its capacity, but actually increase in capacity with use; that it would not deteriorate nor freeze when properly installed in a Detroit Electric.

Think of this wonderful fact; that this battery after two years' use is stronger and more efficient than at the beginning. It sounds incredible, but time after time the truth of this statement has been proven by thousands of practical tests in all climates from the freezing North to the boiling heat of the Philippines.

The hundreds of cars that we have sold from Coast to Coast, from Canada to the Gulf are giving a service that is a revelation. Batteries in cars that have run 27,000 miles are not only in as good condition as when purchased, but show 45% increase in capacity above catalogue rating—15% more than even Mr. Edison predicted.

For several years Mr. Edison and our engineering staff have consulted each other and have conducted exhaustive comparative tests to produce an ideal vehicle—the electric car.

These are the reasons the Detroit Electric to-day stands in its predominant position; and this despite the fact that new cars are being announced every day with "new" features and beautiful theories that have long been discarded by us as impractical.

The Detroit Electric and the Thomas A. Edison Battery represent the achievement of master minds and the constant striving for nothing less than the best. The slight additional cost for these masterpieces is a mere incident when their lasting value is considered, to say nothing of the saving in cost of upkeep and constant renewals.

Our Commercial Trucks in the service of the above-mentioned concerns have taken the place of from two to three teams. Think of it! At the present low rate of electric current now offered in Winnipeg, you can operate our trucks for 1.7 cents a loaded mile. You asked us to prove the efficiency and low up-keep of the electric vehicle, over all other forms of transportation, and we have done it.

What They Think of the Service

Winnipeg, Man., Feb. 2nd, 1912

The Larimer Co., City.
Dear Sirs:

With reference to one ton, Detroit Electric, which we purchased from you last fall. This truck has been in constant use since the early part of October, and has given us absolute satisfaction. We have not had any trouble of any nature whatever, and are more than pleased at the service we have received.

I might mention, that during the period this car has been in use, we have had some very cold weather, the thermometer registering as low as 40 degrees below zero, but this did not seem to interfere in any way with the operation of the car, although it frequently stood for an hour or so at a time, in front of the warehouse, while the driver was at lunch.

I was rather afraid, when purchasing this car, that the Edison Batteries would be affected by severe frost, but I am glad to say that our experience has shown that this is not the case.

I beg to hand you herewith an order for car for our Calgary Branch, to be identical in every respect with the one we are using, and it is possible that we may require another car here in the spring.

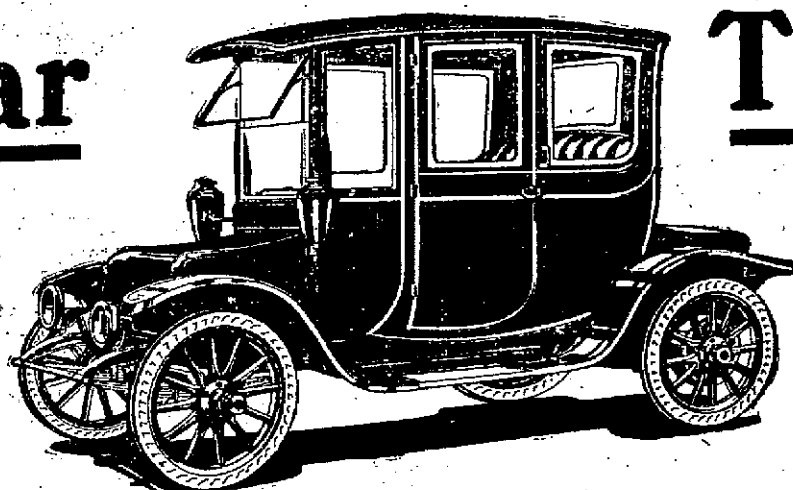
Trusting this information may be of use to you, I am,
Yours truly,

The Winnipeg Paint & Glass Co.
(Signed) E. W. Patterson, Secretary-Treasurer.

THE LAST WORD OF LUXURY AND REFINEMENT IN THE PLEASURE CAR The Electric Car That Has Made Good

By the very nature of things the Detroit Electric is destined to outlive the ordinary car of the day. The Detroit Electric is made to last—not to sell at a price.

You owe it to yourself and to your wife and daughters to be posted about this car, that is owned and operated by the following prominent men and women in Winnipeg.



There is an atmosphere of gracious hospitality, dignity, ease and refinement surrounding the very appearance of the Detroit Electric. It is a motor car which you are proud to ask any guest to enter.

Its many exclusive and patented features make for the utmost convenience and luxury possible.

We have a new catalogue which, by the way, is very artistic, that will give you a good idea of the nine stunning body designs made by us. Far better—we invite a personal inspection and a ride in the car itself. We shall be glad to make an appointment at any time to suit your convenience.

Leading Business Houses and Merchants of Winnipeg who Have Adopted the Detroit Electric Commercial Trucks Equipped With Edison Batteries.

Dr. R. M. Simpson
Dr. D. N. McCalman
Dr. John McDonnell
Dr. Gerhardt Hiebert

Dr. Chas. Cornelius.
Dr. J. N. Hutchison.
Dr. J. A. MacArthur

Mrs. Geo. D. Woods
Mrs. W. W. Blair
Mrs. Ida V. Chalmers

Mrs. A. Hendry
Mrs. Sarah E. Kennedy
Alex. MacDonald

D. H. Bain
L. M. Delbridge
T. J. Langford
Geo. F. Robertson

C. S. Riley
J. L. Bathgate
A. H. Corelli
W. J. Clubb

Let Us Show You This Wonderful Car and Arrange for Demonstration

The Larimer Co., Ltd. *Detroit* **271 Fort Street** **Winnipeg**
WE ARE HAVING A SPECIAL DISPLAY OF CARS IN OUR SHOWROOMS ALL NEXT WEEK
Phone Main 418

October
9 1912

ANNOUNCEMENT

To Owners of Electric Cars

The new Detroit Electric Service Station, on Carlton Street, just north of Portage Avenue, and immediately adjoining the new Free Press Building, is now open for business.

If you own an Electric Car—no matter what the make is—we want an opportunity of telling you about the service we intend giving all Electric Car owners, who will entrust their cars to our care.

Our equipment is the most complete in Canada and our staff is composed of men who know the Electric proposition thoroughly.

We want a chance to go into this matter with you and one of our men will call and explain, if you will 'phone and make an appointment.

WE SELL THE DETROIT ELECTRIC

The Canadian Motor Company, Ltd.

Detroit Electric Service Station

Carlton Street, Winnipeg

PHONE MAIN 4337

THE CARE OF AN ELECTRIC CAR

June 1912

**Private Owners Should Exercise
Care When Recharging on Pri-
vate Plant -- Cells May Be
Ruined in Short Time.**

Many private owners of electric cars have installed private charging plants for the care of their cars when the batteries need recharging.

This system has many advantages if the owner is prepared to give the work proper attention, or has a man whose duty it is to see that the recharging is done at a proper rate and the batteries kept in proper condition for service. There is however, a tendency to carry out the charging without giving proper attention to the charging plant and the consequence is that there is every prospect of the batteries being burnt out for want of proper attention. The majority of the batteries in use on the electric cars in service in Winnipeg are of the lead cell type and unless the recharging of these is given proper attention there is a possibility of the batteries getting burnt out and also of the car catching fire from the overheating of the resistance coils.

In placing a machine on the plant for charging care should be taken to see that the batteries are properly filled within a half inch of the top of each cell with distilled water and when this has been ascertained the charging should be carried on according to the amount of work that the car has done during the day. When only a few miles has been the total of the day's work it is only necessary to recharge at an amperage of about ten amperes as if the charging is carried out at a greater rate the cell becomes overheated and when carrying as much current as it is designed to do the surplus will work back through the resistance coils and if not discovered in time a serious fire will be the result. This applies more to the type of battery as outlined in the opening remarks which owing to their construction are not capable of standing the excessive heat of overcharging without serious or perhaps total disablement. It is claimed the the new Edison battery will not take any harm from overcharging but it will be as well for those who have even this type of battery to take care of the recharging operations as a stitch in time will save nine even in regard to these. If any ordinary precautions are taken by the owner of an electric there is nothing about the work that is at all hard to understand and a mere youngster could perform the operation as long as he was familiar with the rules governing the care of the batteries and the control of the electric switches for running the current to the batteries.

RACING ADVANCES

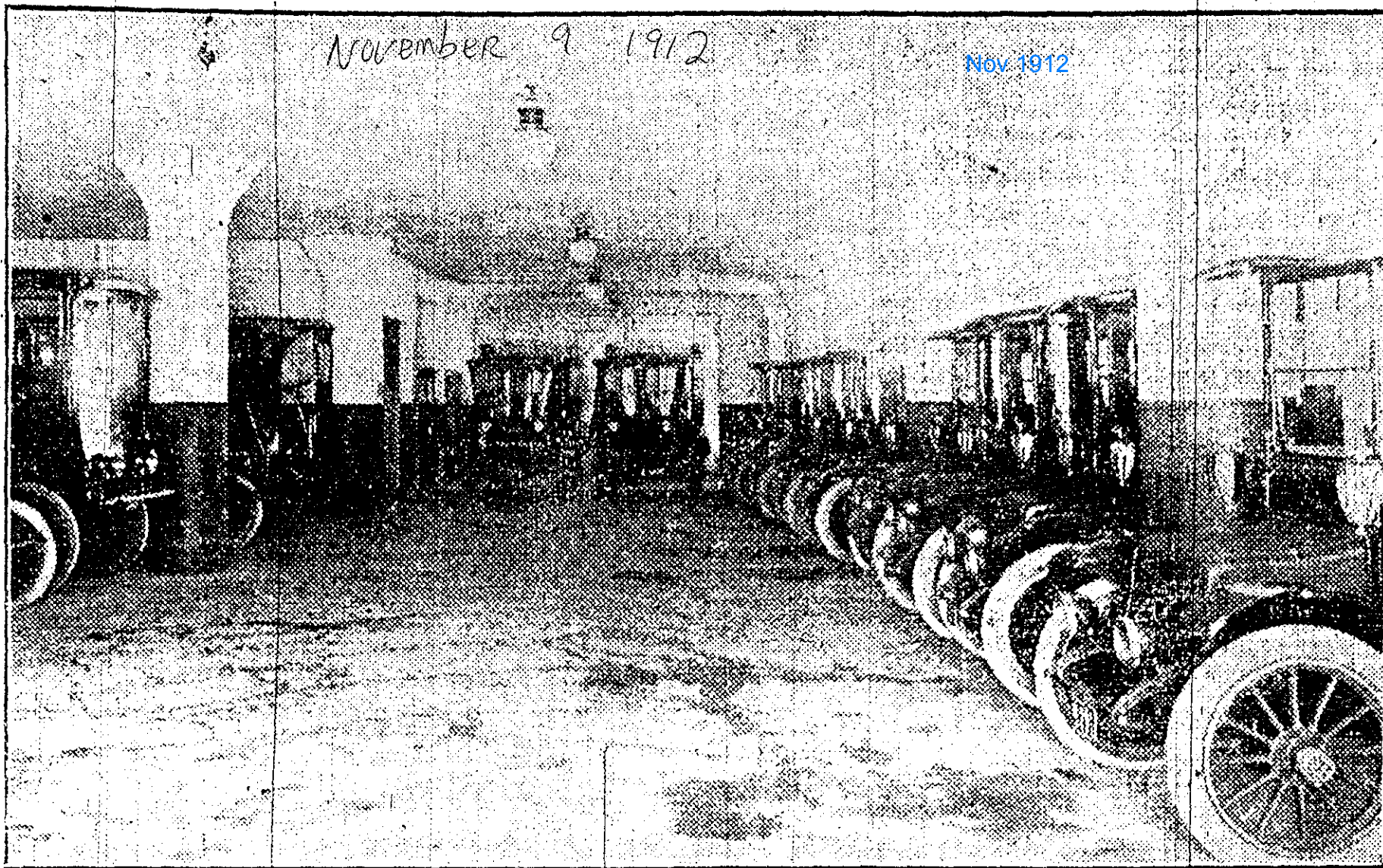
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November 9 1912

Nov 1912



The Detroit electric service station of the Canadian Motor company on Carlton street, next to the new Free Press building, is now in full operation. The opening of this garage has provided one of the finest

homes for electric cars in Canada. It is equipped with the most modern ideas in charging outfits, individual plugs being provided for every car in its own stall, and in case of necessity any car can be connected to another charging line without the necessity of removing it from the stall.

A special fixed monthly rate has been arranged for the storage, charging and care of electric pleasure cars and trucks, which gives the owner an absolute knowledge of the cost of running his car, outside of any extras incurred for tire renewals or breakages due to accident.

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Nov 1912

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The Detroit Electric Service Station, Next to New Free Press Building on Carlton Street. One of the Three Garages Operated by the Canadian Motor Company, Ltd.

October 24

1975

City to buy electric cars

Three electric cars will be purchased by the City of Winnipeg, with the provincial government, which plans to buy three as well, paying 75 per cent of the cost.

Mayor Stephen Juba told the executive policy committee Thursday the city and province will sign a six-car package deal. Each car costs approximately \$11,771, but the city will pay only about \$3,000 each. The province will pay the rest.

Committee members questioned whether the matter should not go to council for approval.

Mayor Juba objected, saying if the item goes to council process, he can't give administrators the order to buy immediately. He said it was not necessary for council's approval, but the information could go to each councillor.

The committee agreed that money for the purchases be taken out of the equipment replacement fund.



The EVA electric luxury sedan looks like a standard Renault on the outside . . . but it's a different matter under the hood.

Gov't turned on by electrical wonder

By Darlene Meakin
Tribune Staff Writer

October 8
1975

The electric car, heralded by many as the car of the future, made another appearance in Winnipeg Tuesday.

As the EVA electric luxury sedan whined to the front of the legislative buildings, a handful of government officials, including Premier Ed Schreyer and Public Works Minister Russ Doern watched with keen interest.

Mr. Doern took the shiny-red electrical wonder for a spin around the block, and would only say later that any decision regarding the purchase of the auto will be made later this month.

But Premier Schreyer seemed visibly impressed when he returned from his test drive.

The EVA has an advantage over other electrical vehicles the government has tested in that it is a standard auto design, said the premier.

"It neither handles nor looks strange."

The EVA, manufactured in Parma, Ohio, is a standard Renault 12 with a few major differences under the hood. Instead of a standard gasoline engine, this car has 16 96-volt lead-acid batteries, six of which are located in the front and 10 in the rear.

Warren Harhay, designer and builder of the car, said it has a top speed of 50 m.p.h., and a cruising range of 60 miles before the batteries need recharging.

The car's thick, black extension cord can be plugged into a regular 110-volt outlet for 12 hours, or into a 220-volt outlet for six hours.

The cost of the vehicle is about \$12,000, compared with \$5,100 for a standard Renault 12. But it will cost less than three-quarters of a cent a mile to operate, said Mr. Harhay.

Aside from the extra 15 batteries, a rear plug-in and extension cable, the car looks

much like any other compact on the market.

It is 174 inches long, 64.5 inches wide, and 56.5 inches high with a 96-inch wheelbase. Other features include deep foam-padded front seats with built-in headrests, and a fully-padded back seat with an arm rest.

The car has also been tested in sub-zero temperatures, said Mr. Harhay. The car has a battery-heating system that will keep the batteries operating at full capacity in even the coldest temperatures, said Mr. Harhay.

Although the car has been designed for use by the regular consumer, the only purchaser so far has been the U.S. government, which is testing 12 cars in Washington.

Premier Schreyer said the government views the electric car with interest because of the need to convert from fossil fuels to more renewable or semi-renewable forms

of energy.

The electric car won't gain wide popularity overnight, but will become more feasible in the next 10 to 15 years, he said.

Electric cars may not make sense now, but in the long run, the difference in cost will be very little, said the premier.

If tests prove favorable, the government could conceivably purchase several dozen to add to its fleet of 2,400 vehicles, said Mr. Doern.

The government has already ordered a Goliath electric van at a cost of \$17,000, and Manitoba Hydro has ordered an electric car for \$16,000.

The government tested the smaller Citi-car, which would cost about \$2,900, in July. But besides being unsuited to a cold climate, the vehicle has since been found to be unsafe, a consumer's report says.

The government trades in about 700 vehicles each year, of which two-thirds are passenger cars.

October 25 1975

Province to order electric cars soon

The provincial government will order electric cars for its own use and for the city of Winnipeg next week, Public Works Minister Russ Doern said Friday.

A decision on the number of cars to be ordered will be made next week, Mr. Doern said. Winnipeg's executive

policy committee decided Thursday to buy three cars as part of a package deal with the province.

The cars, Renault bodies with electric motors, will cost approximately \$11,700. The province will pay 75 per cent of the cars the city orders, as Premier Ed Schreyer promised in the

1975 throne speech.

A better rate can be obtained through a quantity order, Mr. Doern said. The cars may take two or three months to arrive in Winnipeg. Mr. Doern's department has already ordered an electric Batronic van, which it expects may arrive in three weeks or so.

November 1 1975

Seven electric cars expected in January

Seven electric cars should appear on Winnipeg streets by January, one of them driven by Premier Ed Schreyer, an enthusiast about energy saving.

The provincial government ordered seven electric Renaults Friday from the Electric Vehicle Association in Cleveland, Ohio; three for the city of Winnipeg, three for the public works department, and one for the Manitoba Telephone System.

Premier Schreyer, Public Works Minister Russ Doern, and his deputy, Marvin Nordman, will experiment with the cars as personal vehicles for a few months, and then other civil servants will use them, Mr. Doern said Friday.

A separate, heavier circuit may have to be put in at their homes, so the cars can be plugged in at night to recharge their 16 batteries.

The province's aim is to test the vehicles for winter driving and economy of operation, Mr. Doern told a news conference, and to educate the public about them.

"We're not buying toys. We're buying expensive test vehicles."

Each four-seater car will cost about \$10,500, including transportation costs, Mr. Doern said. Ordering in bulk has saved between \$600 and \$700 on each.

The province is paying 75 per cent of the cost of the cars which the city will use. The government promised in the Throne Speech that it would help any Manitoba municipality which wants to experiment with electric vehicles.

The city will use the cars for deliveries. MTS will use its vehicle as a dispatch car for mail, messages, plans and light deliveries.

Mr. Nordman will head a committee which will develop a use and testing program for the province's cars.

Two public works mechanics, including Bill Carmichael, head of the provincial garage, will be in charge of servicing the province's vehicles. They will be available to the city and MTS for advice.

Both men have been in the United States learning about servicing and operation of electric vehicles.

The government is looking into the possibility of buying conversion kits to turn regu-

lar cars into electric cars in a few years, if it's not too hard to do.

He said Manitoba is running "one to two years ahead of the United States and is probably also leading in Canada" in experimenting with electric vehicles. Manitoba Hydro ordered some vehicles some time ago, and the province will also test a Battronic van.

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Province tests three

January 16 1976

Electric cars whirl about city

Three electric cars delivered to Manitoba government officials Thursday look identical to the normal road-running gas-guzzlers — but they smell and sound different.

"That is one of the main features which attracts us to this model," Marvin Nordman, public works deputy minister, said in an interview.

"We can test drive this car without feeling uncomfortable in public because the cars look different. A lot of the electric cars look like overgrown golf carts."

Renault body

The electric cars, built by Electrical Vehicle Association, of Cleveland, Ohio, have an electric engine inside a standard Renault body. Batteries fill all the trunk space as well as the space under the hood.

The car's interior has the standard features of seat belts, radio, a floor gear shift and bucket seats. Except for the large circular indicators showing the battery amperes and volts, the dashboard is standard.

The engine is turned on with as

much noise as the flick of a light switch. "Idling" at a stop sign or red light makes no noise whatsoever, Mr. Nordman noted.

A quiet whirl starts as the driver steps on the accelerator. The interior heating system makes more noise than the engine, sounding somewhat like an electric lawnmower.

The three cars are to be operated by Mr. Nordman, Premier Ed Schreyer and Public Works Minister Russell Doern. Three more cars are to be turned over to city council for experimental use and one car will go to Manitoba Telephone System.

The vehicles, which cost \$10,000 each, can go 60 miles at 30 miles an hour before requiring re-charging. Mr. Nordman said 17 hours on a standard 110 volt plug is required for the batteries to recover full strength.

Switching cars

Mr. Nordman will be giving up a Plymouth Fury in exchange for the electric Renault. The premier will be stepping down from a four-door Chevrolet while Mr. Doern will be ex-

changing a Cougar for the electric car.

The government bought the cars to test the feasibility of electric cars in Manitoba's climate, Mr. Nordman explained. Until now, these models have not been tested farther north than Duluth.

Test program

A comprehensive test program has been prepared, requiring the drivers to fill-out the forms after every trip in the car.

"I realize that's a lot to ask a premier to do and I hope he'll do it. But he's been the major push behind the electric car program," the deputy minister said.

The drivers are being asked to record how far they travelled, weather and road conditions, and battery readings at the beginning and end of the trip. The drivers are also expected to fill in monthly reports on their impression of the car's braking, steering, comfort, visibility and other features which will help the government decide if electric cars are practical for Manitoba.



Russell Doern and his staff look under the hood.

Doern tests electric car

January 23 1976

Charge low, drive slow

By Ron Kustra

Tribune Legislature Reporter

Manitoba Hydro and the provincial government have kilowatts of power to export, but this surplus didn't help Public Works Minister Russ Doern when his electric car faltered.

Mr. Doern was recently demonstrating his all-battery powered Renault to a friend when the voltage in the dozen batteries nearly expired.

At a snail's pace of two mph., they returned to the friend's home, one-half mile away. Then the friend drove Mr. Doern home in a standard car.

Despite this experience, the public works minister is positive about the electric car and its prospects in urban transportation.

The province recently purchased seven electric Renaults, each costing \$10,500, double the price of the regular model. A Battronic truck-van, with a \$10,500 price tag, will be delivered in several weeks.

Three cars are being leased to the city of Winnipeg, and another to the Manitoba Telephone System. Premier Ed Schreyer and Mr. Doern's deputy minister have driven the two other cars for the past week.

Driving an electric car requires "a psychological adjustment in your thinking," said Mr. Doern, who has travelled about 135 miles. "I've made that already."

Handling the car in 30-to-35 mph. city traffic is "no problem whatsoever." The driver must deal with personal concerns and insecurity related to "the power and reliability" of the car.

"You do not have the same power. You're driving a much lighter-powered car and you feel it." When the driver presses the accelerator, "you know it's not going to respond" the same as a car with a gasoline engine.

Mr. Doern tends to be more cautious when driving the electric car and is "generally being passed continually." He also noticed traffic quite frequently moves at only 15-to-20 mph.

The car is identified with a "VEA Electric" nameplate and a sign in the rear window, which reads, "This is a pollution free electric car."

This attracts the attention of other motorists. Some follow the car for a few blocks, while a few "want to drag . . . want to see if they have more guts than you do, and they do," Mr. Doern said.

The manufacturers claim the car can travel 60 miles at 30-mph. before it needs to be charged. "The range is considerably reduced" in cold weather.

Mr. Doern suggested "a drastic revision" is necessary for travel "in the dead of winter in Manitoba" — proba-

bly 20-to-30 miles at 30 mph. before recharging the battery.

The dashboard "is too sophisticated for the average person" and will have to be changed for commercial development of the car.

But an attractive feature is "no exhaust and . . . no vapors." This alone is an important safety feature for winter motoring and "will obviate rear-end collisions."

The future "lies in the development of a better battery . . . or a breakthrough in the technology," Mr. Doern said, maybe even service stations where a person receives new batteries instead of the recharging of the batteries while they are in the car.

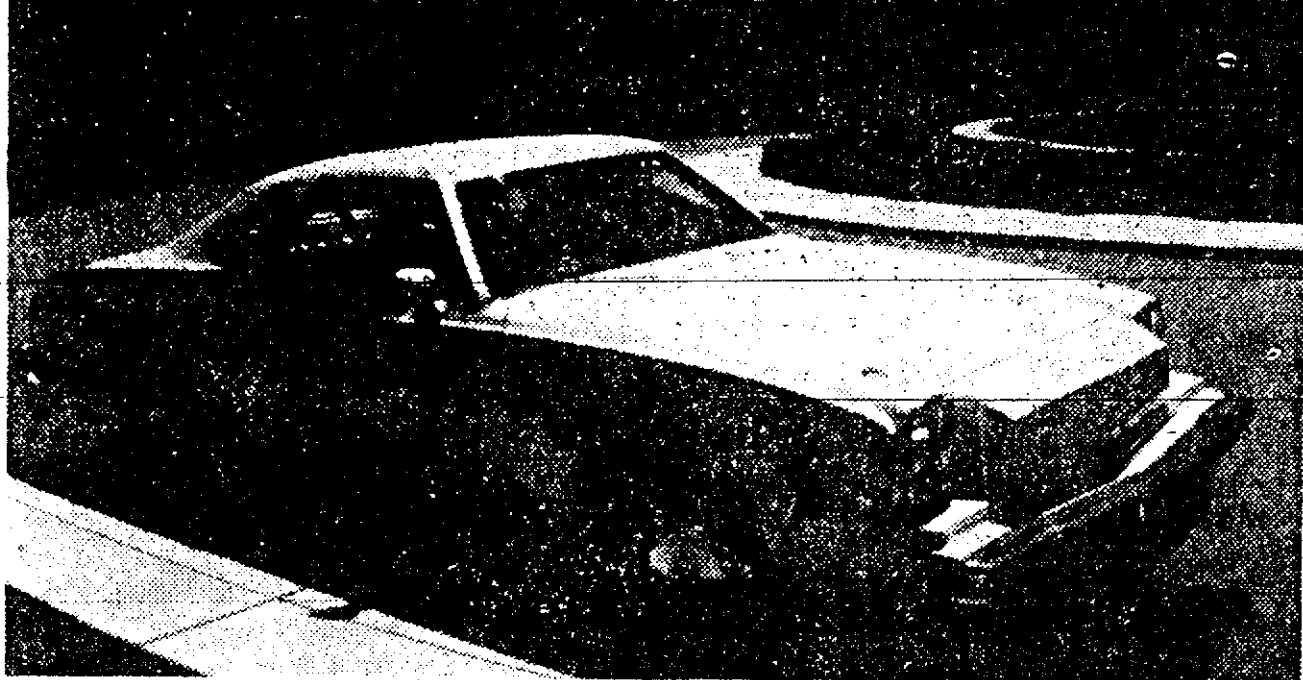
Any battery car also will require a range of 200 miles, he added.

Which all relates to Mr. Doern's crawl back to his friend's home. The charge volt needle is the equivalent of the gas gauge.

"It's difficult determining how much charge you have left," he explained.

Other cabinet ministers and civil servants will drive the cars and truck in the next few months before a technical report is prepared.

The provincial government at that time will determine if the electric cars are more efficient than their gasoline counterparts when analyzed on the operating costs per mile driven.



Transformer 1 is the first mass produced all-electric car

March 1976

Future may be here with Transformer 1

The future may be already here with the Transformer 1, the first all-electric automobile to be mass-produced. The Transformer will be on display at Auto Show 76, and is now being marketed in Canada. Manitoba Hydro has ordered one of these vehicles for evaluation purposes and expects to receive delivery shortly.

Transformer 1 has a top speed of about 70 mph and a range of 50 to 100 miles per charge, depending on driving habits and speed travelled. The system can recharge to 80 per cent capacity in about 45 minutes without damage to the system, but this requires connection to special charging stations. On normal house circuits, battery recharging would take about eight hours.

The battery of Transformer 1 is the lead-

cobalt type; it took nine years to develop and has been tested in more than 70 vehicles. Batteries that have been tested in road vehicles have had a life of between 48 months and 70 months.

The electric motor is a 32 horse-power, General Electric direct current traction unit with a projected life of 20 years. The electronic controller is solid state, operating at 180 volts and 600 amps, which feeds current to the motor in pulses. At 50 mph there is almost continuous power flowing from battery to motor.

The projected fuel costs to operate the Transformer 1 are 0.80 cents per mile, and the Canadian list price for the car is expected to be about \$21,000.00. A delivery time of about one month is expected.

Renault's electric car may ease energy crisis

"The solutions to the energy crisis will not be found in a single technical development, but rather in a number of developments. We look to solar energy as a possible part of the solution, and we see the electric car in the same way."

The Deputy Minister of Public Works, Mr. Marvin Nordman was explaining the Renault Electric Car as he drove it around the downtown area.

The red Renault is standard in external appearances and only the very sharp observer would notice any difference. However there are some differences in handling.

Acceleration is slower than with the standard auto engine, and Mr. Nordman says that he sometimes feels a little embarrassed when he pulls away from a stop-light. Because of front-wheel drive the car is very good in snow, but it does steer a little heavy because of extra weight.

The Renault EVA Electric is about 800 pounds heavier than the standard Renault, and much of the extra weight is from batteries under the hood. There are ten six-volt batteries where the engine is normally located, and six more in the trunk space. In operation they produce 96 volts and provide about 30 horsepower.

The cars are rated to have a range of 60 miles at 30 mph, but because of the adverse effect of cold weather on battery performance they may not do that well in Manitoba. Mr. Nordman says that in the present state-of-the-art, the electric automobile is strictly a commuter car that could supplement the standard auto but not replace it.

The provincial government took delivery of six of the Renault EVAs in



Marvin Nordman

December, and since that time they have been operating them as a field experiment to gather operating data. It is still too early to know just what role the electric vehicle would play in the over-all transportation scheme, but a few facts are beginning to emerge.

The direct operating costs are almost negligible, but the batteries must be replaced periodically. When this is allowed for, the operating cost would be roughly two cents per mile. The initial cost of electric vehicles is high, roughly twice the price of a conventional car. But the motor will last three times as long as an internal combustion engine, and maintenance costs will be much lower.

If a mass market developed for electric cars then the high initial price would drop, possibly to a figure comparable to that of conventional autos.

But the mass market will not materialize until the performance of the vehicles is improved. At present, the operating range is limited because of battery capacity and until the range is improved the use of electric cars will be restricted.

The United Kingdom is in the forefront of research and development of electric propulsion, spurred on by their vulnerability in respect to imported oil. There have been large fleets of delivery trucks — notably milk trucks — operating with electric propulsion systems in England for some time.

The milk truck is particularly suited to the limitations of electric propulsion. The delivery route distance falls within the range of existing batteries and the truck can be recharged at its own depot during the night when electricity is in abundance.

But for the electric car to have a mass market there must be a major technological break-through in battery science. Intensive research in the United Kingdom is being carried out in battery technology, and there is hope that success may come within five years.

The most promising possibility is in development of a high-temperature sodium/sulphur battery that could provide ten times the storage capacity of present batteries. This battery would have a capacity of 200 Kilowatt-Hours/Kilogram for only a marginal increase in cost. Some researchers feel that a successful model may be available within three or four years.

Other research is being directed toward a development of a commercially usable metal/air battery that would give five times better storage capacity than existing batteries.

and started a unified ambulance service last summer.

...received minor injuries.

...display there until Saturday. The cars, from 1937 to

...Owners' Club. A 1951 Bentley is in the foreground.

...six million funding.

Premier 'poops along' in battery-powered buggy

By Jenni Mortin
Tribune Legislature Reporter

Winnipeg's sub-zero winter weather hasn't been hospitable to the government's new electric cars, which are built for balmy climates.

When the temperature drops, reports Premier Ed Schreyer and others who've driven the cars, so does the power in the 18 batteries under the hood.

It can make for pretty slow travelling if you don't keep your eye on the charge level. "It wouldn't ever strand you," the premier said in an interview. "It just sort of poops along."

The car's efficiency drops off sharply when the temperature falls below zero Fahrenheit, he said.

In other respects, the cars are great. The weight is like having bags of sand in the trunk, the premier said. Traction in winter conditions is also good.

Winter performance was one of the things the government hoped to learn about when it bought the three electric Renaults, for more than \$10,000 each, Public Works Minister Russ Doern

said in an interview.

"We anticipated a performance reduction. We've found no problems we didn't predict," his deputy, Marvin Nordman said.

Mr. Nordman, Mr. Doern and Mr. Schreyer have been the major drivers of the cars, which were delivered in January, in time to hit the winter's coldest weather.

Two major flaws have shown up, Mr. Doern said.

Because 110-volt plugs were fitted to the cars so they could be plugged into a regular outlet, they take 15 to 16 hours to get a full charge. Overnight charging isn't enough, the drivers have found.

If not fully charged, the lead acid batteries are cold and function below their peak, cutting down the mileage possible with one charge. After an eight-hour charge, the range would be 15-20 miles on a cold day.

Heaters have operated "between poor and fair," he said. They don't warm up the interior of the car to most people's satisfaction.

At -30 or -40 Celsius, the batteries operate at

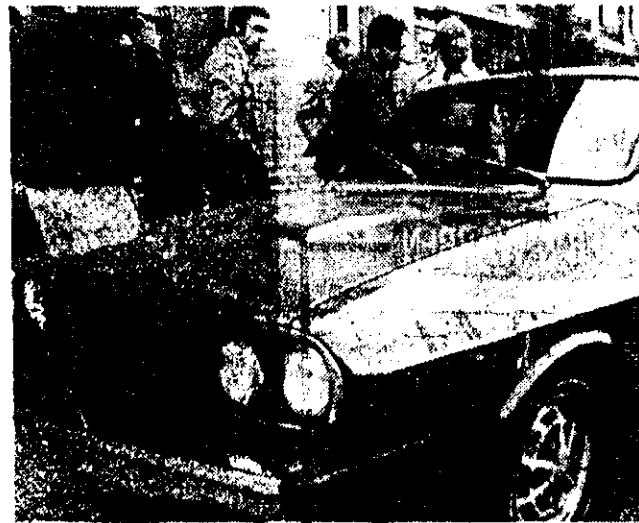
35 to 40 per cent efficiency, Mr. Nordman said, and this cuts into the mileage very heavily.

Insulating the batteries with styrofoam would make a difference, he said. Right now, they have electric battery blankets on them, but the blankets can't be plugged in to the same circuit which is feeding juice to the battery.

The cars have to be acclimatized, one driver said, and then should do 40 miles on one charge in winter, compared with 50 in summer.

Mr. Nordman said this winter's trial should determine how far the cars should be driven between charges during periods of cold weather. Next year, when they are part of the government's car fleet, their daily mileage will be limited to that figure.

Overnight charging costs about three cents per hour, he said, and he expects the electric cars will cost less to operate than the regular internal combustion engine vehicles, even taking into account purchase price and battery replacement every three years — about \$1,000 for all 18 batteries.



Electric cars look like standard Renaults on the o

Police

March 18 1976

Electric car: Pearl wants a better idea

October 26
1976

By Tom Shillington
Urban Affairs Reporter

One week behind the wheel of the "car of the future" has convinced city councillor Pearl McGonigal that the future can wait.

She's not about to trade in her trusty little compact for an all-new, energy-saving, battery-run electric car.

"I'm glad we didn't buy them," she says of the city's decision not to buy three of the \$7,000-models from the province. Instead, the city is renting the vehicles for \$1,800 on a one-year trial basis.

Test-driver McGonigal, better known as the ICEC councillor for Silver Heights, says the idea of electric cars is a good one. But the list of drawbacks seems too long to make it practical for Winnipeg drivers.

That's not to say the car isn't fun to drive, she adds. The look of other drivers — searching for the extension cord, perhaps — and the consternation of a gas station attendant looking for the gas tank, are enough to make even a short test drive worthwhile.


It's just that a driver must make several key mental adjustments to take into account the vehicle's limits.

Such as making sure you have a traffic-free block of space before pulling away from a stop sign. At 3,500 pounds, the small, U.S.-made auto whirs slowly away from a stop — hardly the thing for the drag racer.

And no tailgating, either.

The heavy weight and absence of powerbrakes make slowing down different from traditional gasoline engine cars. It's a good idea to allow yourself a few extra car lengths to stop.

And a driver can't stray too far from home. The car's 16 batteries — that means no trunk space — give it a range of about 25 miles before the heavy cord must be plugged in for re-charging.



Coun. McGonigal re-charges battery-laden trunk before venturing out again.

Jan 10 1978

'Flop from the start': Carmichael

Electric car tests 'short out'

By Stephen Riley
Tribune Staff Writer

Manitoba's much-vaunted electrical cars have turned out to be a flop, says the man in charge of the province's vehicles.

W. G. Carmichael, manager of the vehicles branch in the department of public works, said there were "great promises" made about the cars, which were never fulfilled.

"In my opinion, it was a flop right from the start because we couldn't get service from the manufacturer," he said in an interview.

Finance Minister Don Craik has said the government will dispose of the seven vehicles, purchased in 1976 by the Schreyer government at a cost of \$73,500.

Recent reports have suggested that cold weather doomed the cars from the start; but poor battery chargers and poor servicing were the culprits, said Mr. Carmichael.

And a federal official agreed.

"I give Ed Schreyer full marks for getting in there and doing something about it, but he got the wrong vehicles," said Fred Johnson, involved in special vehicle assessment for the department of industry, trade and commerce.

"Time spent on reconnaissance is seldom wasted," he said. "In his haste, perhaps the premier (Schreyer) did the wrong thing."



Bill Carmichael's smile, when his staff received the electric cars in early 1976, was short lived

Mr. Carmichael said the seven cars have given "so much trouble since day one, that we couldn't really evaluate them," so a comprehensive report has not been done.

"I suppose, in my opinion, that they shouldn't have been purchased — not seven of them, anyway," he said.

Russ Doern, minister of public works when the cars were bought in 1976, said Monday there were two reasons for buying seven.

"I believe it was related to the trailer load — that there were seven of these things on the trailers, and we got a better price on freight — and also, I guess we got a better price on the quantity; there was a discount, but I forget how much," he said.

Mr. Carmichael suggested that a test program with two cars would have provided just as complete results as the program with seven.

Three of the cars were run by the province, three were

leased to Winnipeg Hydro and one was used by the Manitoba Telephone Service. They were built by Electrical Vehicle Association of Parma, Ohio, using an electric motor powered by 16 six-volt batteries in a standard Renault body.

The province has had the cars almost exactly two years; in all that time, the battery chargers have never worked properly, despite assurances from the builder that a better design of

chargers would be forthcoming.

Company servicemen came to the province three times in 1976 and modified the chargers.

"They just became a little worse," said Mr. Carmichael. "They were always over-charging. We were constantly refilling the batteries with water. We could never get a proper reading in kilowatt usage or mileage."

The builders promised a new type of charger, but Mr.

Doern eventually was told by the company that there were none, that one was being tested at the University of Alabama and that was the extent of new developments.

"They (the builders) were sort of pulling the wool over our eyes," Mr. Carmichael said.

The company had promised the cars would go 55 or 60 miles on a single charge, but the best recorded mileage was 38, he added. "We got 15 or 16 miles in the winter; if we were fortunate."

Still, Mr. Johnson — the federal official assessing such vehicles — said there was tremendous potential for electrical vehicles, and that Canada is lagging behind in the field.

The public works people have been having notable success with a mini-van purchased about 15 months ago, said Mr. Carmichael.

The \$19,400 Battronic vehicle is working very well as a delivery van, travels up to 55 miles on a single charge of its 112-volt battery package and has had only two or three hours of "down time" since it was bought, he said.

Much of the pressure for purchase of the electrically-powered vehicles came from former premier Ed Schreyer, who stressed the importance of conserving fossil fuels and relying more on electricity.