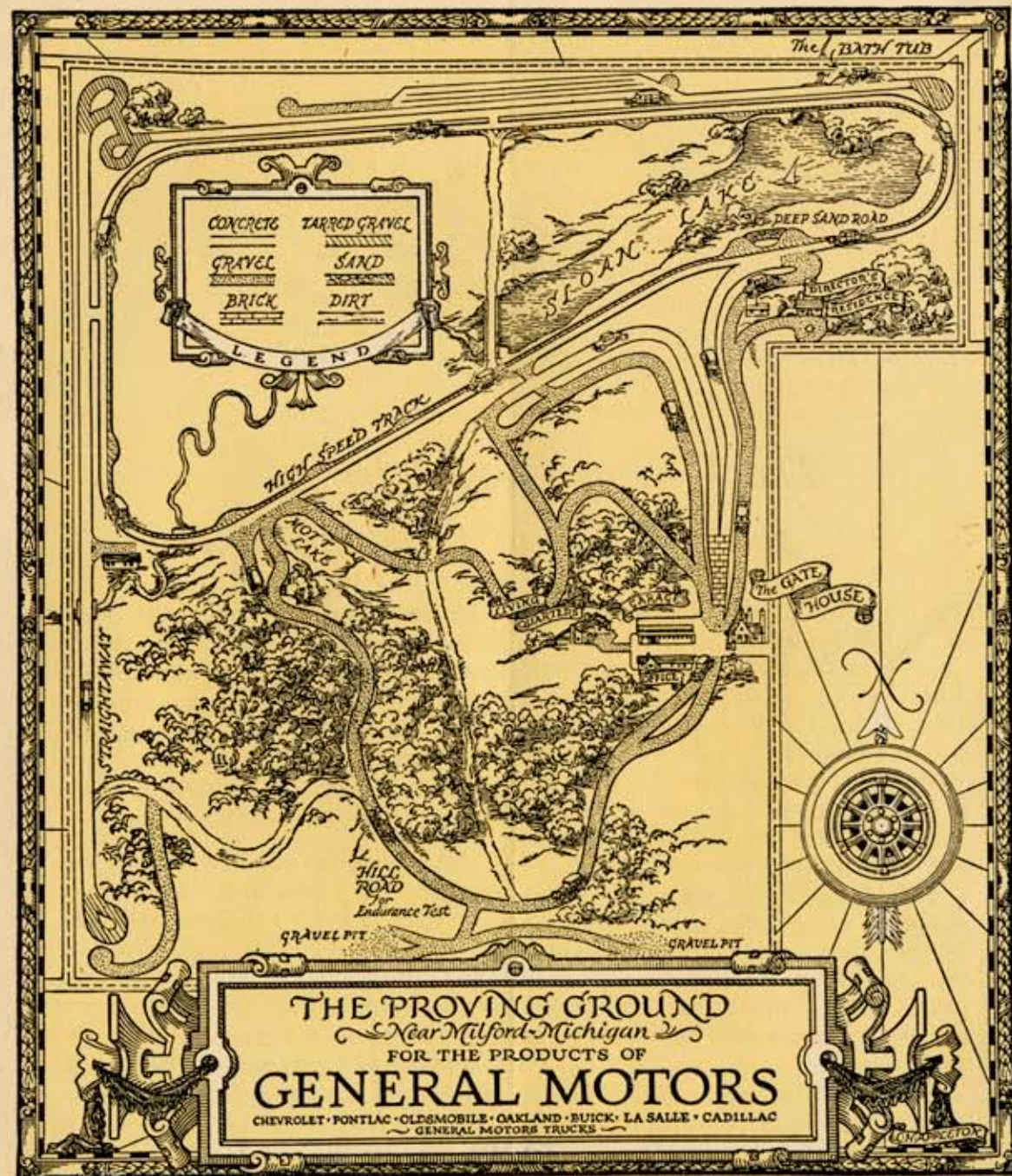


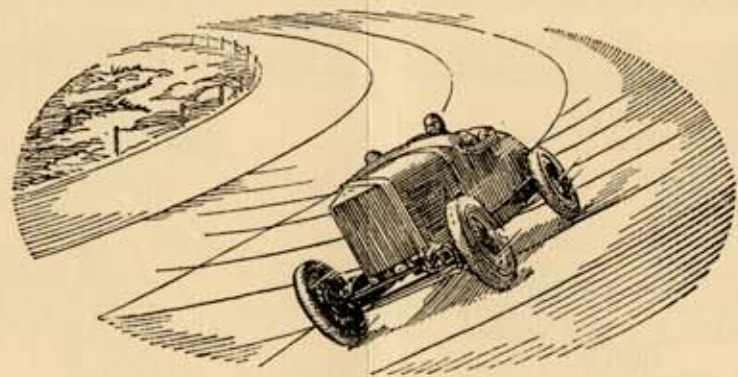
The
PROVING GROUND
 for
 the Products of
GENERAL MOTORS

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Revised
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The Proving Ground for the Products of General Motors

NEARLY all commodities and the essentials of life cost more today than before the war. There is one shining exception—the automobile. Today it is a closed car, usable twenty-four hours a day in all weather. So, based on what it is and what it does, the present day car has utility value of at least two or three times that of the old car; and actually costs less.

Today's car is the net result of the industry's accumulated experience. Year by year, there has been gradual evolution, the object being to make a car simpler, more dependable, of higher quality, of greater utility, and always at a lower price.

Progress of the automotive industry, because of its brief career, appears phenomenal. However, compare a new car

with its immediate predecessor! There is great refinement but no radical departures. The relatively few revolutionary developments may be chronicled thus: The gas engine, pneumatic tires, multiple cylinders, alloy steels, anti-friction bearings, self starters, closed bodies, Duco—the new body finish.

No other great industry has gone forward so swiftly with so few basic facts—facts that are needed if the motor car is to be of increasing usefulness to a greater number of people. If the industry is to continue its rate of progress it must know more facts about the materials used, the economies of design and what happens as the car is being operated mile after mile upon the road in the hands of the user.

To get these facts General Motors five years ago decided to establish a proving ground and to make it the most comprehensive undertaking of the kind in the world.

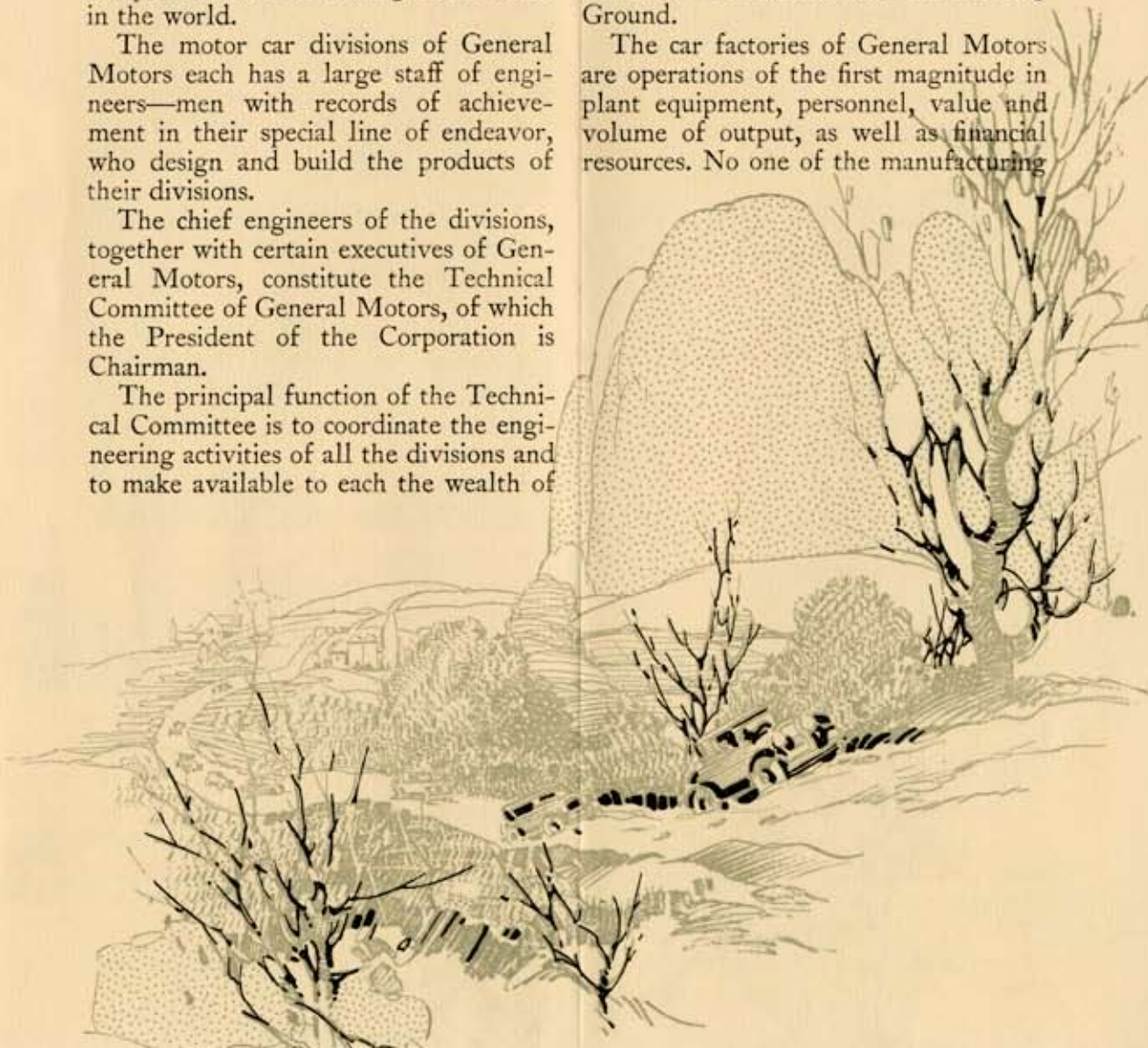
The motor car divisions of General Motors each has a large staff of engineers—men with records of achievement in their special line of endeavor, who design and build the products of their divisions.

The chief engineers of the divisions, together with certain executives of General Motors, constitute the Technical Committee of General Motors, of which the President of the Corporation is Chairman.

The principal function of the Technical Committee is to coordinate the engineering activities of all the divisions and to make available to each the wealth of

their combined experience. The Technical Committee co-ordinates two independent and unique activities—the Research Laboratories and the Proving Ground.

The car factories of General Motors are operations of the first magnitude in plant equipment, personnel, value and volume of output, as well as financial resources. No one of the manufacturing



divisions alone could shoulder the responsibility of institutions so comprehensive as the Proving Ground and the Research Laboratories. But, the widespread and varied activities of General Motors make their existence practicable and necessary to progress. And, because of the large financial resources of General Motors, the responsibility is not a burden to any of its divisions but an asset to all.

The Research Laboratories at Detroit with their vast equipment, facilities and

technical personnel are engaged in making cross-section studies of the motor car in general and in carrying on a complete survey of the motor car field and its utilities as they may be expected to develop for many years to come.

The Proving Ground is the place where all types of motor cars are tested and compared under identical driving conditions. Its activities take two directions:

First: It provides a place where the engineers of the car divisions of General Motors bring their products and test them.

Second: It provides a place where the resident engineers of the Proving Ground carry on independent tests, free from the problems of design and production.

From these tests the Proving Ground is gathering with impartiality and accu-

racy data on all cars, to provide comparative information that will reflect the customer's point of view, making it available as a permanent record for all General Motors divisions.

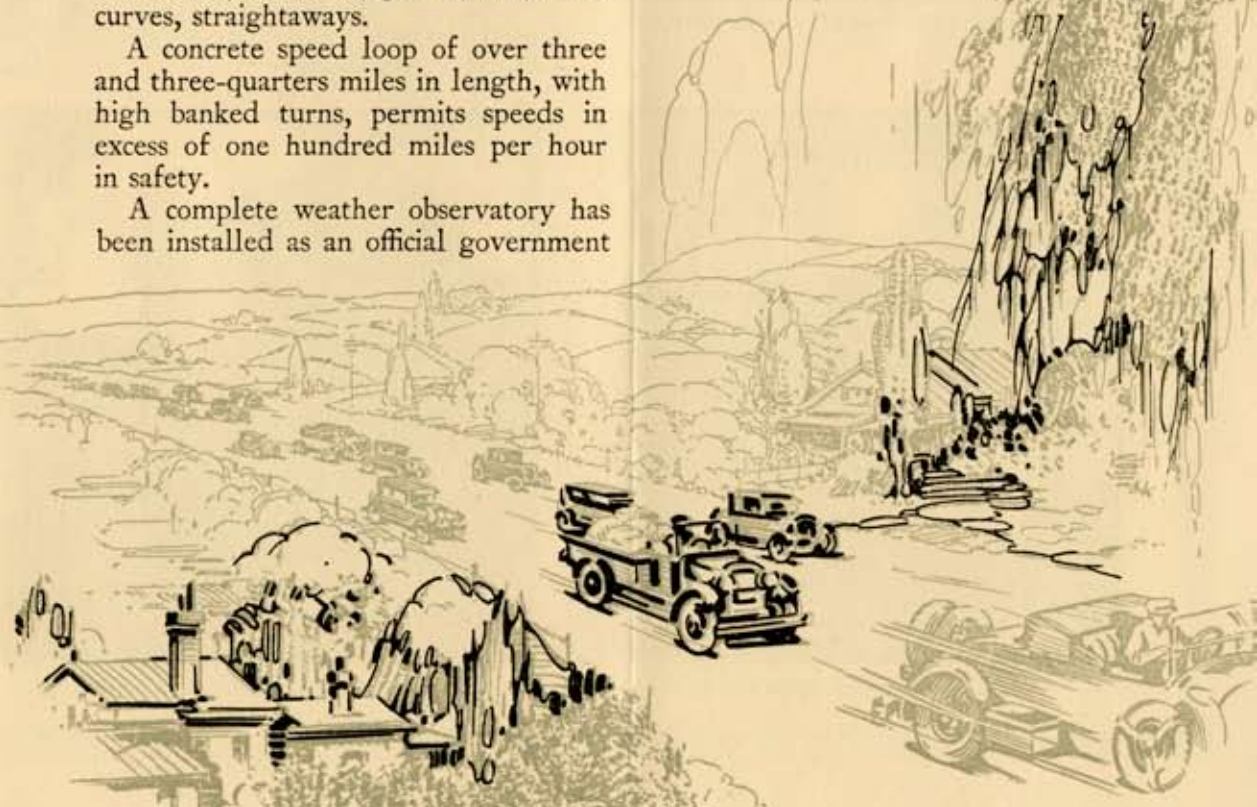
In 1923, the land for the Proving Ground, comprising approximately 1,300 acres, 42 miles northwest of Detroit, was acquired. It is located about equi-distant from Lansing, Flint, Pontiac and Detroit. In this tract is level and hilly country and all sorts of rough and smooth roads with all kinds of surfaces—concrete, macadam, gravel, dirt, hills, curves, straightaways.

A concrete speed loop of over three and three-quarters miles in length, with high banked turns, permits speeds in excess of one hundred miles per hour in safety.

A complete weather observatory has been installed as an official government

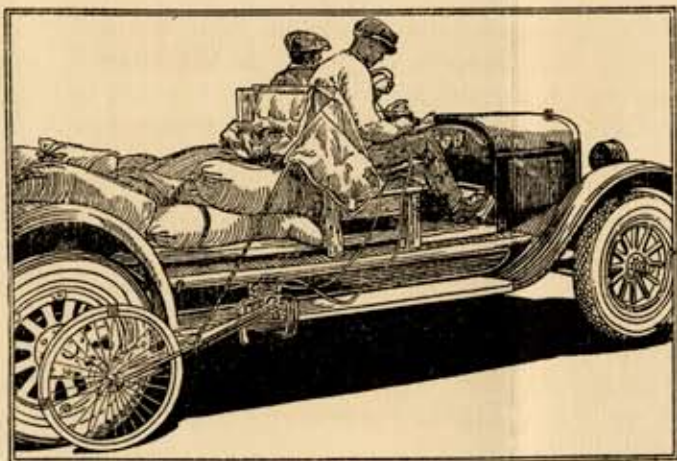
cooperative station from which regular reports are made to Washington, and copies are mailed daily to every General Motors Division which makes tests at the Proving Ground. A feature of the equipment at this station is the only device in existence for making instantaneous record of wind velocity.

Shops and garages have been built, large and adequately equipped to maintain the hundreds of cars being operated. There are living quarters for the staff of resident engineers, and the vis-



The Measuring Instruments

Much of the recorded data at the Proving Ground is of such nature as to call for measuring and indicating instruments never before required. The General Motors Research Laboratory is proving indispensable in making available in rugged form for road test work most of the delicate apparatus familiar to the scientific laboratory



Electric "fifth wheel" speedometer



Electrical apparatus recording acceleration



Fuel measuring apparatus



Duplicate wheel measuring steering effort



Measuring clutch pedal pressure



Measuring brake pedal pressure and deceleration

iting engineers of the divisions who come to the Proving Ground to conduct tests on their cars.

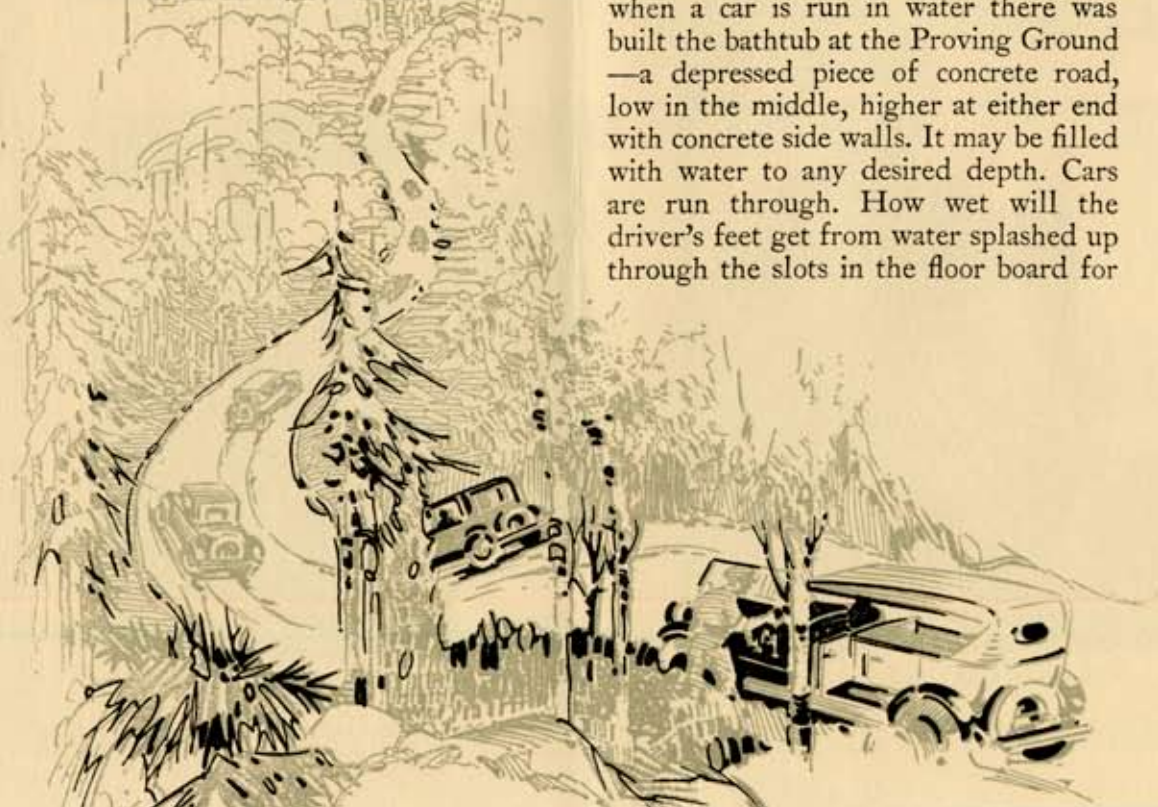
The Auditorium Building includes a cafeteria and dining room, and a well equipped theatre. There are ample educational facilities to care for the thousands of visitors, including dealers, sales and service men, divisional field representatives, factory employes and export representatives and others who visit the Proving Ground annually to become familiar with its operations.

Facts are facts, and General Motors

engineers want answers to these questions. How quick will a car stop? What is its acceleration? How much gas and oil does it consume? What is its minimum speed—its maximum speed? Will it start readily in cold weather? How short will it turn? How much of the road can the driver see?

On the roads of the Proving Ground the engineers are getting answers to these and many other questions dealing with automobile performance.

What happens when a car must ford a stream? To find out what happens when a car is run in water there was built the bathtub at the Proving Ground—a depressed piece of concrete road, low in the middle, higher at either end with concrete side walls. It may be filled with water to any desired depth. Cars are run through. How wet will the driver's feet get from water splashed up through the slots in the floor board for



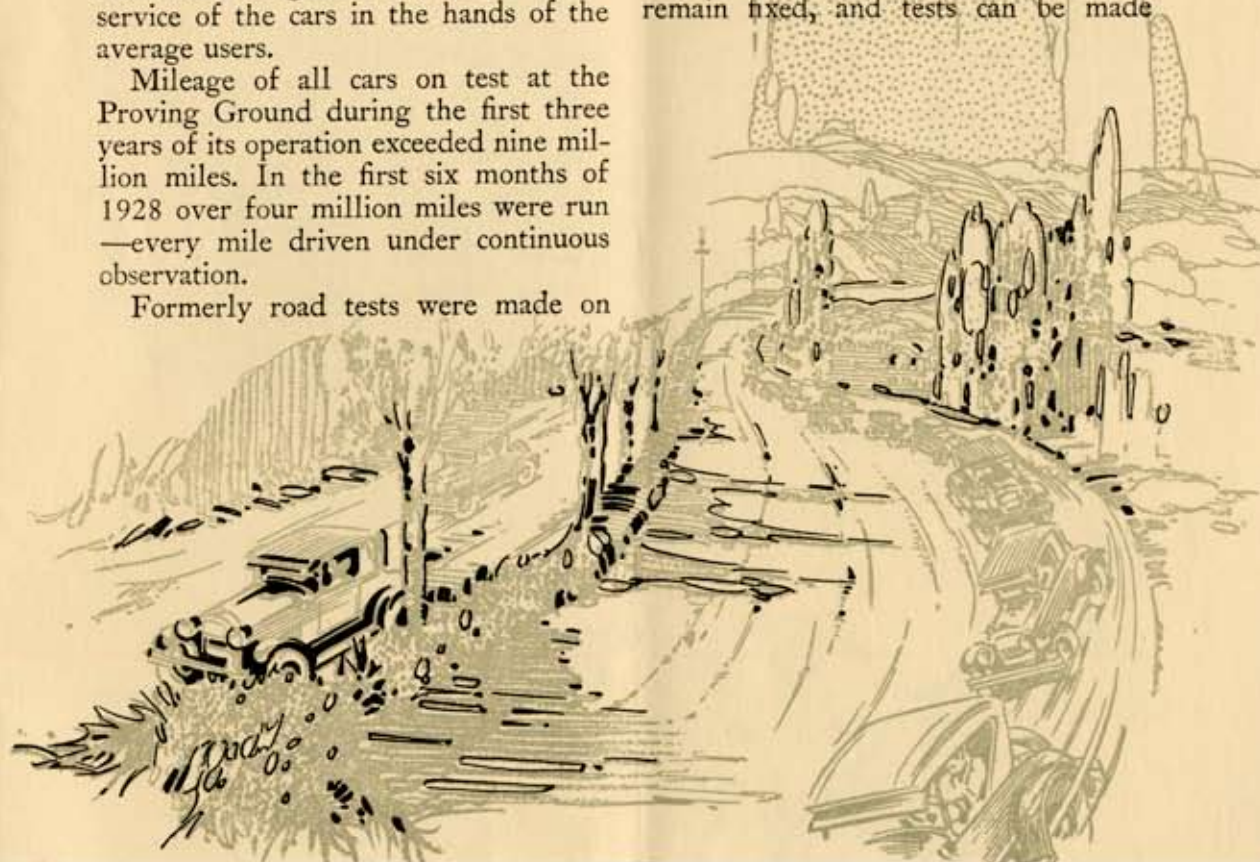
the clutch and the brake pedal? What happens to the brakes when they get wet? Does water splash up on the windshield and obscure vision? Do the driver's windows get wet? Will the ignition short-circuit? Will the carburetor take water, the engine cough and spit and die right in the middle of the stream?

Cars are run summer and winter, day and night, in all kinds of weather, by crews of drivers who in a single month concentrate more road experience than could be gained in years of actual service of the cars in the hands of the average users.

Mileage of all cars on test at the Proving Ground during the first three years of its operation exceeded nine million miles. In the first six months of 1928 over four million miles were run—every mile driven under continuous observation.

Formerly road tests were made on

the public highway under most adverse conditions. Obviously it is not possible to conduct a series of tests even over the same piece of road and get comparable results, because of the interference from other cars on the road and the changing conditions of the road itself, over which there could be no control. The Divisions of General Motors made road tests in different sections of the country. At the Proving Ground the roads do not vary, because they are under constant maintenance, the grades remain fixed, and tests can be made



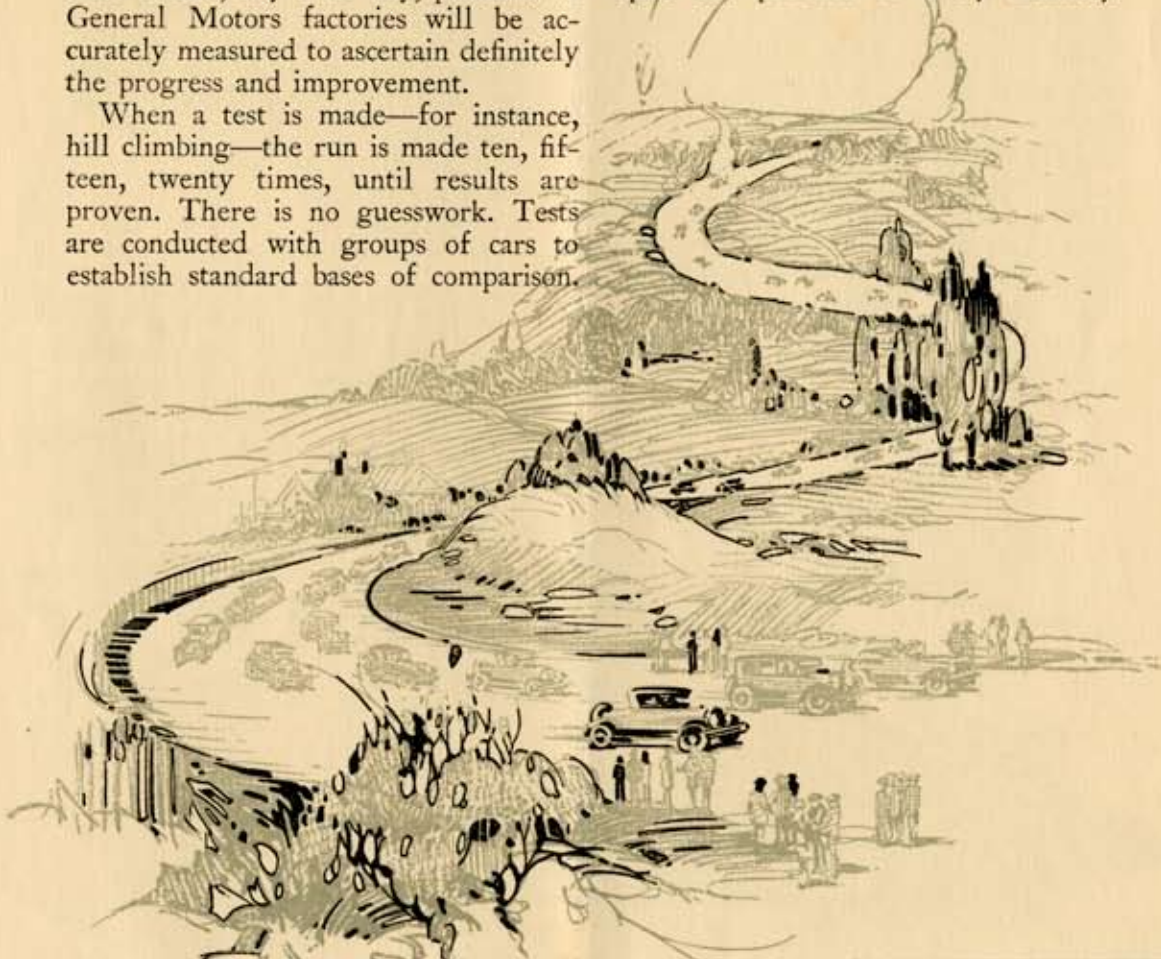
without traffic interference under identical conditions. The results are comparable.

The Proving Ground is a place where today's cars may be measured and studied. The cars of tomorrow will be put through identical tests, over identical roads, under similar weather conditions. And so on, year after year, month after month, day after day, products of General Motors factories will be accurately measured to ascertain definitely the progress and improvement.

When a test is made—for instance, hill climbing—the run is made ten, fifteen, twenty times, until results are proven. There is no guesswork. Tests are conducted with groups of cars to establish standard bases of comparison.

The experienced baker produces high quality bread because he knows and controls the variables of oven temperatures, of yeast and flour—so the engineers using and operating the Proving Ground know the variables that affect car testing and have learned to control them so that they do not distort results.

The buying public sits in judgment upon the product of every industry.



General Motors engineers are trying to find out the types of cars which will have the greatest appeal to the motoring public. What are the desirable features that influence the final decision in the purchase of a car? Obviously no one car can combine every desirable feature. If it has a long wheelbase it cannot turn in so short a space, or park at a crowded curb with the ease of a car with a very short wheelbase. One with a big engine may develop more power, but speed does not necessarily mean flexibility at low speeds in traffic or hill-climbing ability. What is the happy medium that will satisfy the average purchaser?

The Proving Ground in its tests is building a basis to evaluate these and a multitude of more or less intangible things, one against another, so that cars may be compared, feature for feature, from the viewpoint of the buyer.

Every new device, every novelty, every principle in engineering and con-

struction, every kind of material, must prove itself by use. So that whatever is most advanced in automotive engineering will be found in General Motors cars after it has withstood exhaustive road tests.

Through the information made available as a result of the Proving Ground the engineers of the General Motors divisions are constantly improving their products to meet public requirements and tastes. The value of these improvements is evident in better products that render better service at lower operating costs. This continual striving to advance the present products and make more efficient cars of high quality at lower price brings forth developments that keep General Motors products ahead of the times and point to continued leadership.

Proving the products of the factories at the Proving Ground marks a forward step—an assurance to the buyers of General Motors cars that the final product is right.

In addition to the annual report and quarterly statements of earnings General Motors issues special booklets to inform stockholders, employes, dealers and the public generally. A request to General Motors Corporation, Department of Publicity, Broadway at 57th Street, New York, will bring the series by mail.

CHEVROLET : PONTIAC : OLDSMOBILE : OAKLAND : BUICK : LASALLE : CADILLAC
GENERAL MOTORS TRUCKS : YELLOW CABS AND COACHES

GENERAL MOTORS

THESE CARS AND FRIGIDAIRE, THE AUTOMATIC REFRIGERATOR, MAY BE BOUGHT
THROUGH THE GMAC DEFERRED PAYMENT PLAN