



General Motors  
Proving Ground  
40<sup>th</sup> Anniversary

1924 - 1964

GENERAL MOTORS PROVING GROUND  
40TH ANNIVERSARY  
MAY 1964



To commemorate its 40th Anniversary the Proving Ground presents this picture story of its growth and development to you, its employes, our part of "The General Motors Family". You write its success story.

The Proving Ground started with 1125 acres of land, one building with 12,000 sq ft of floor area and 7 miles of test roads. Today it has grown to 4011 acres of land, 40 buildings with 586,251 sq ft of floor area and 75 miles of roads. To this, must be added the 2554 acre Desert Proving Ground at Mesa, Arizona with its 20 buildings, 87,381 sq ft of floor area, and 17 mile road system. This facility began operation in 1953; operations at the old Phoenix Lab started in 1937. The Pikes Peak Engineering Test Headquarters Building with 7500 sq ft of floor area, located in Manitou Springs, Colorado, was opened in May of 1954.

During the first full year of operation, a total of 1,563,000 test miles was driven. This year the total at all PG facilities will exceed 22,000,000 miles. During the first week in May, 1964, the total of test miles since 1924 passed the 300,000,000 mile mark.

Coincident with the 40th Anniversary is the dedication of the new 4.5 mile circular test track. This facility represents the largest single construction ever undertaken at the Proving Ground. It was featured in the four day 40th Anniversary program on the 14th, 15th, 16th and 17th of May.

Some of the old-timers may recall the early scenes in this picture story of the old and the new; all of us can look at it and say, "Thank goodness they don't make 'em like they used to!" To this end, the Proving Grounds has made an outstanding contribution to automotive progress through aid to the manufacturing divisions and staff operations in their development of new products and through development of test instrumentation, test facility and techniques. We are certain that such progress will continue to be written in the history of the years that lie ahead.

Compiled and Edited By  
Arline R. Rininger  
May 27, 1964

Louis C. Lundstrom  
Director  
GENERAL MOTORS PROVING GROUND

40TH ANNIVERSARY PICTURES  
MAY 14-15, 1964



The GM Proving Grounds Management, L. C. Lundstrom, Director, H. F. Barr, GM Vice-President-Engineering, and C. J. Brady, Manager, DPG



Executives Viewing Display - E. Cole, Vice-President; F. G. Donner; J. F. Gordon; J. A. Anderson, Vice-Presidents; L. C. Goad, Executive Vice-President; H. F. Barr; W. L. Mitchell, Vice-President



Entering the Proving Ground for "The Big Day".



Buses ready to pick-up visitors for road tour.



Coordinating buses, guides, and demonstrations "Where are my guides"?



Here they are!!



Visitors loading bus for road tour and demonstration area.



Destination: Grandstand at demonstration area.



Mr. F. G. Donner, Chairman of the Board of Directors of General Motors



Mr. J. F. Gordon, President of General Motors



Ribbon Breaking Ceremony for 4.5 Mile Circular Test Track



Mayor Haller of Howell, T. S. Hancock, L. C. Lundstrom, and Mayor Johnson and Manager Weidner of Milford

DEMONSTRATION AND DISPLAYS



Panic Brake Stop



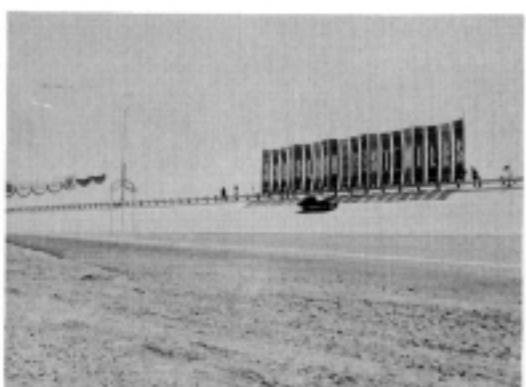
Maneuvering at 80 mph



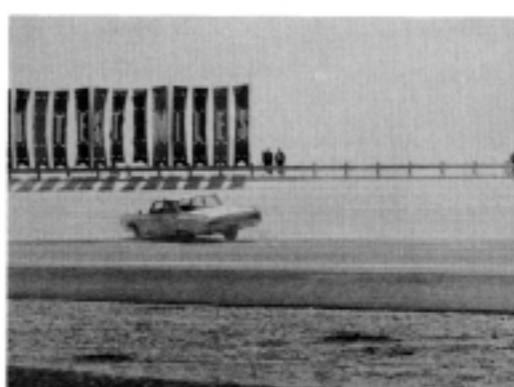
Crashing Into 3-Legged Lamp Post



Remote Control Crash



Corvette Travelling at High Speed



J-Turn



1924 Chevrolet setup with early instrumentation and Lloyd Pearsall with 38 years of service.



Watching the Action



Blow-Out at 70 mph



All in a Day's Work



1920 Oldsmobile - Looks Unbelievable to Them



Oldsmobile Division

DEMONSTRATION AND DISPLAYS



Chevrolet



Fisher Body Division



Power Plant



Durability



GMC Truck and Coach Division



Buick Division



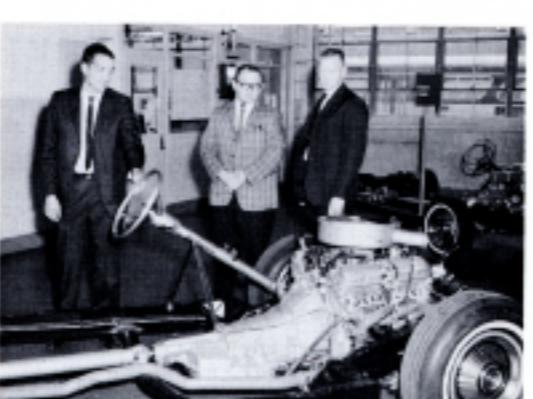
Photographic



Engineering Test



Hydramatic Division



Pontiac Division



Noise and Vibration



Heading for parking lots and home.

DEMONSTRATION AND DISPLAYS

IT STARTED WITH THESE MEN



Alfred P. Sloan, Jr.



W. J. Davidson

Through the foresight of Mr. Alfred P. Sloan, Jr.; then President of General Motors, the General Motors Proving Ground came into being in 1924. Prior to this time all the car road testing had been done on the public highways, and the condition of the roads was controlled by the highway department. Some brake tests were run on a road near Flint and by the time experimental changes on the brakes were made and the car taken back for comparison tests, the road had been resurfaced, completely nullifying any comparison with the first tests. Situations like this led to the inevitable development of a private road system owned by the Corporation.

Mr. W. J. Davidson located the site of the present Proving Ground early in 1924 and the results of surveys convinced him and the General Technical Committee that the topography of the area would satisfy their requirements for a flat, level area, where a mile-long straightaway could be constructed, with an adjacent hilly section of sufficient grade for hill climb tests. He was given the "Go-Ahead" signal and by May of 1924 the original tract of 1125 acres had been purchased and work was started on the roads and buildings.

PAST DIRECTORS OF THE PROVING GROUND



Fenn Holden  
1924 - 1925



O. T. Kreusser  
1925 - 1929



A. J. Schamehorn  
1929 - 1941



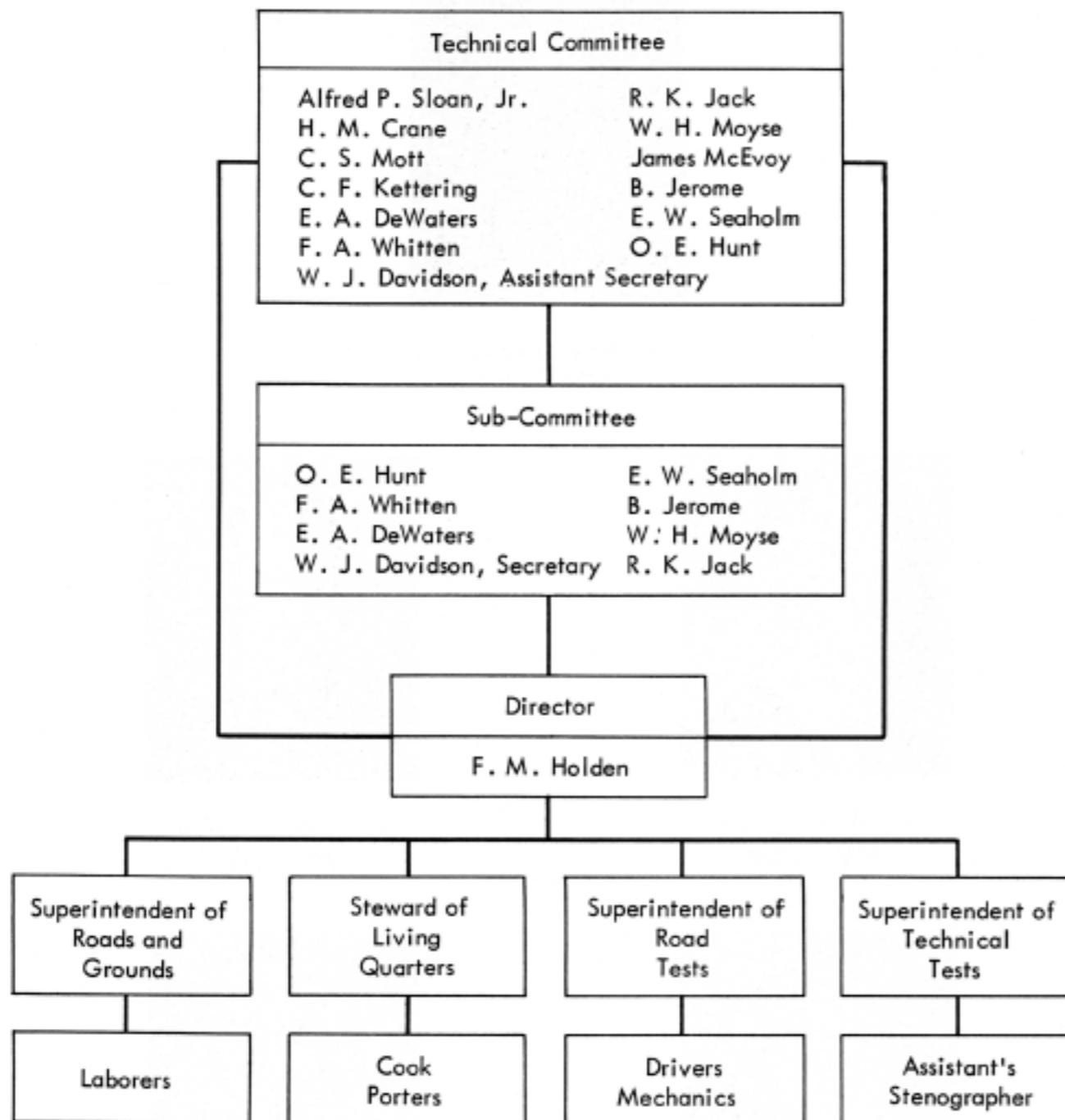
Ernest E. Wilson  
1941 - 1944



H. H. Barnes  
1944 - 1956

## ORGANIZATION CHART - GENERAL MOTORS PROVING GROUND

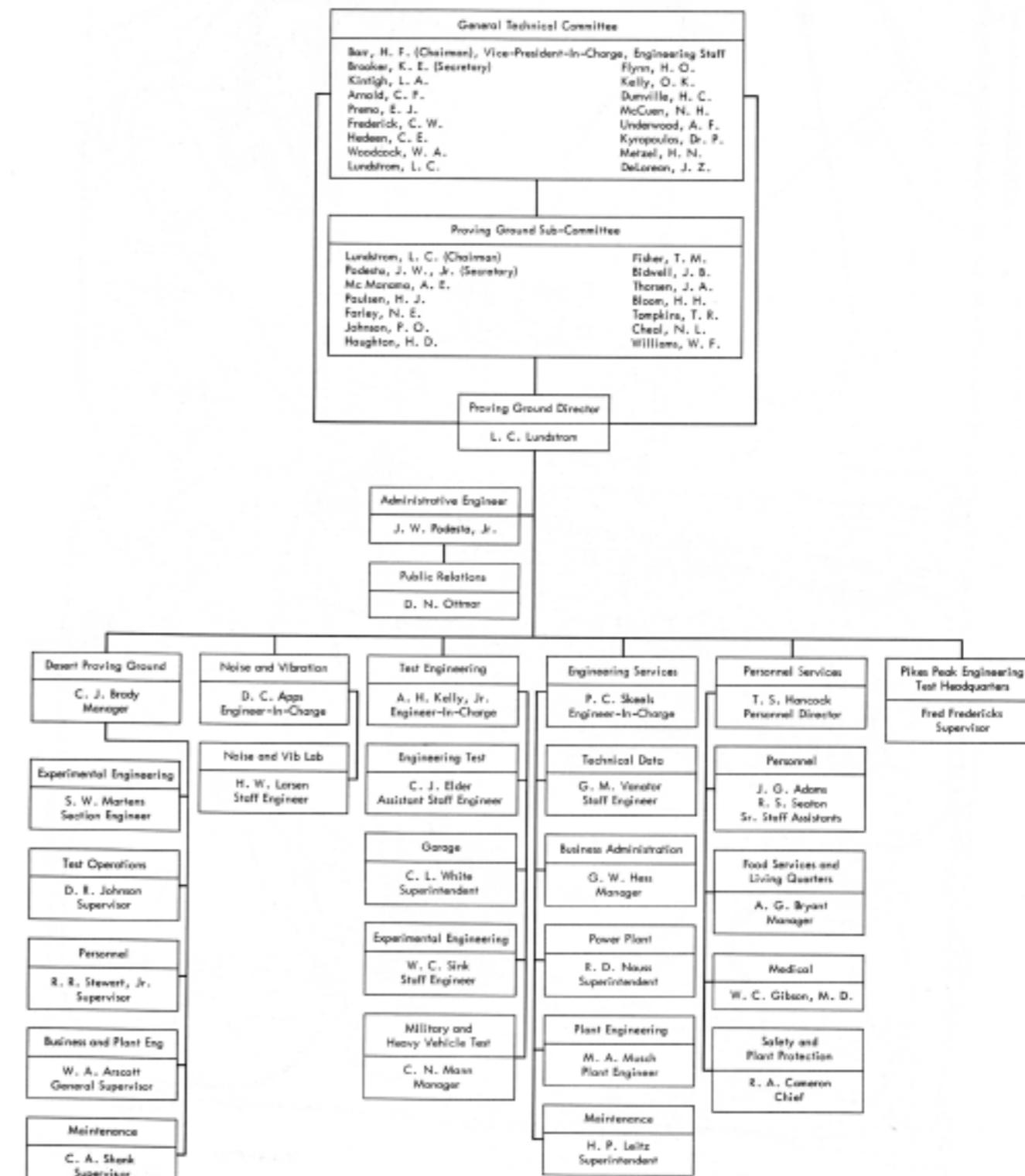
1924

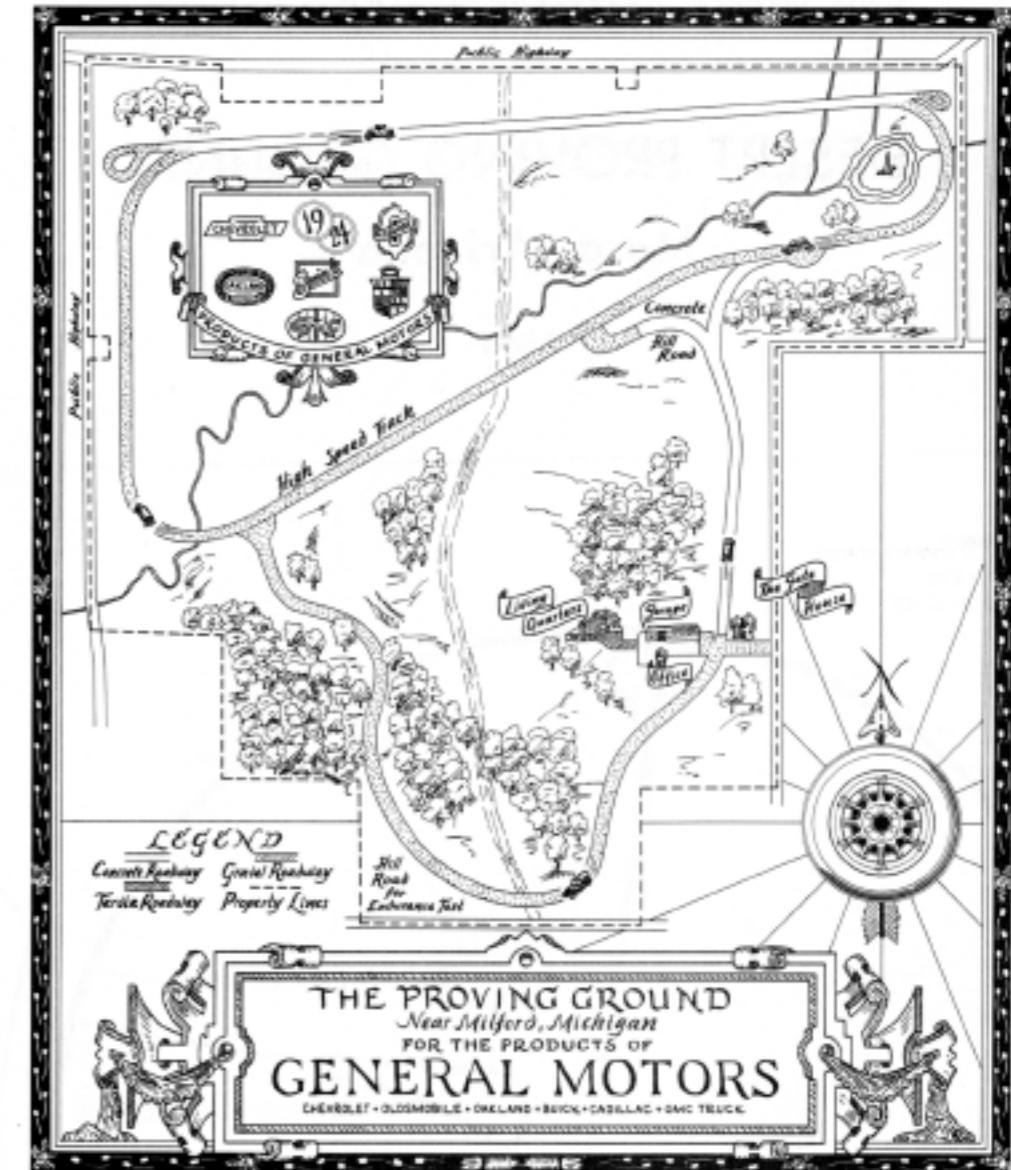
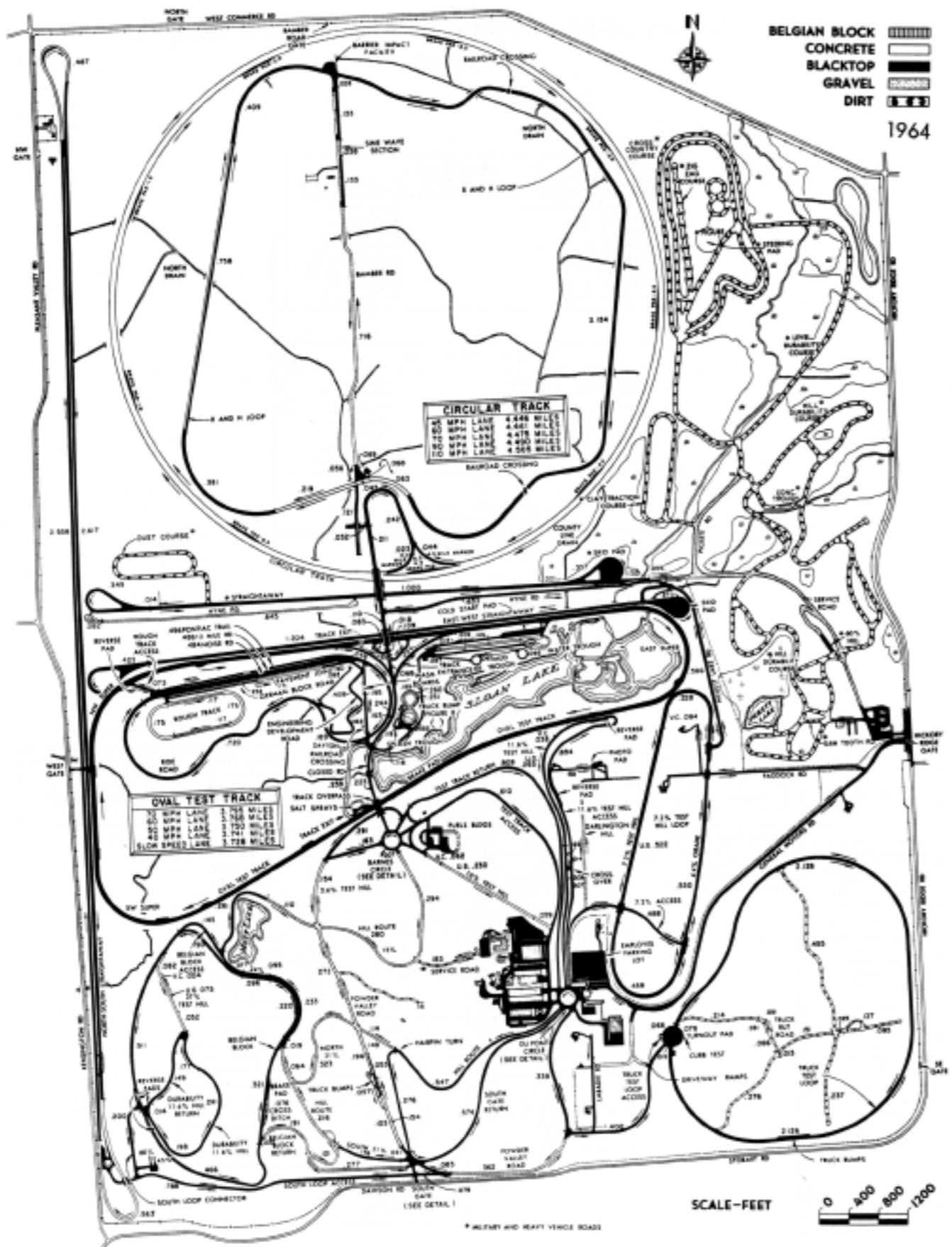


There is an interesting parallel in the organization charts of then and now; the relationship between the Proving Ground and the General Technical Committee remains similar. The committees have increased their number of members as the Corporation has grown and the subdivisions under the Director are more numerous today to supervise the increased Proving Ground activities.

## ORGANIZATION CHART - GENERAL MOTORS PROVING GROUND

MAY, 1964





The 1924 road map of the Proving Ground shows 7 miles of track and hills. Note that the original north side of the Oval Test Track was the East-West Straightaway. These roads were separated in 1925.

The 1964 map is opposite with a total of 75 miles of roads. The aerial view (right) is of the commercial building area and part of the road system.



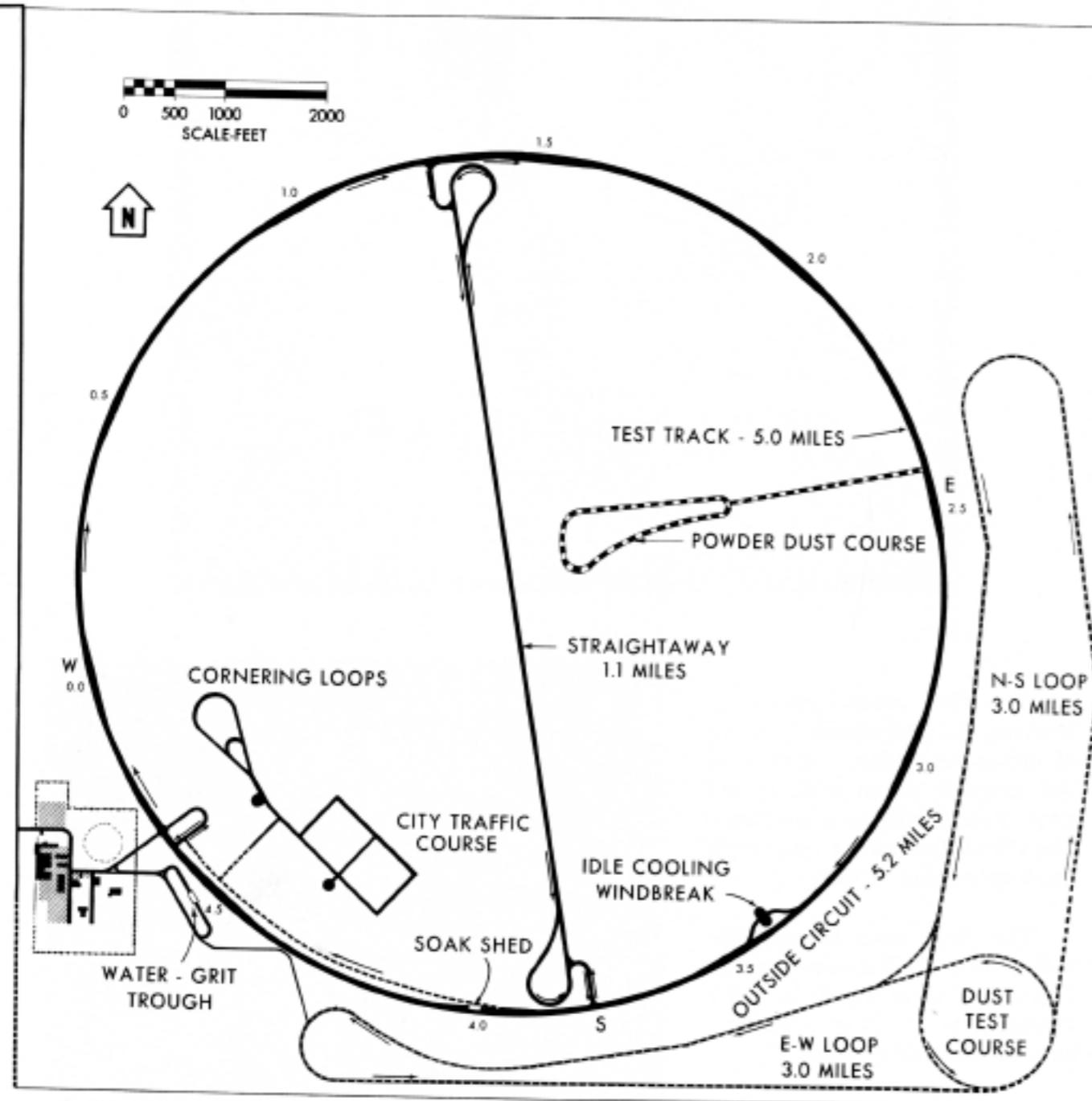
# General Motors Corporation

DESERT PROVING GROUND

## DESERT PROVING GROUND

Mesa, Arizona

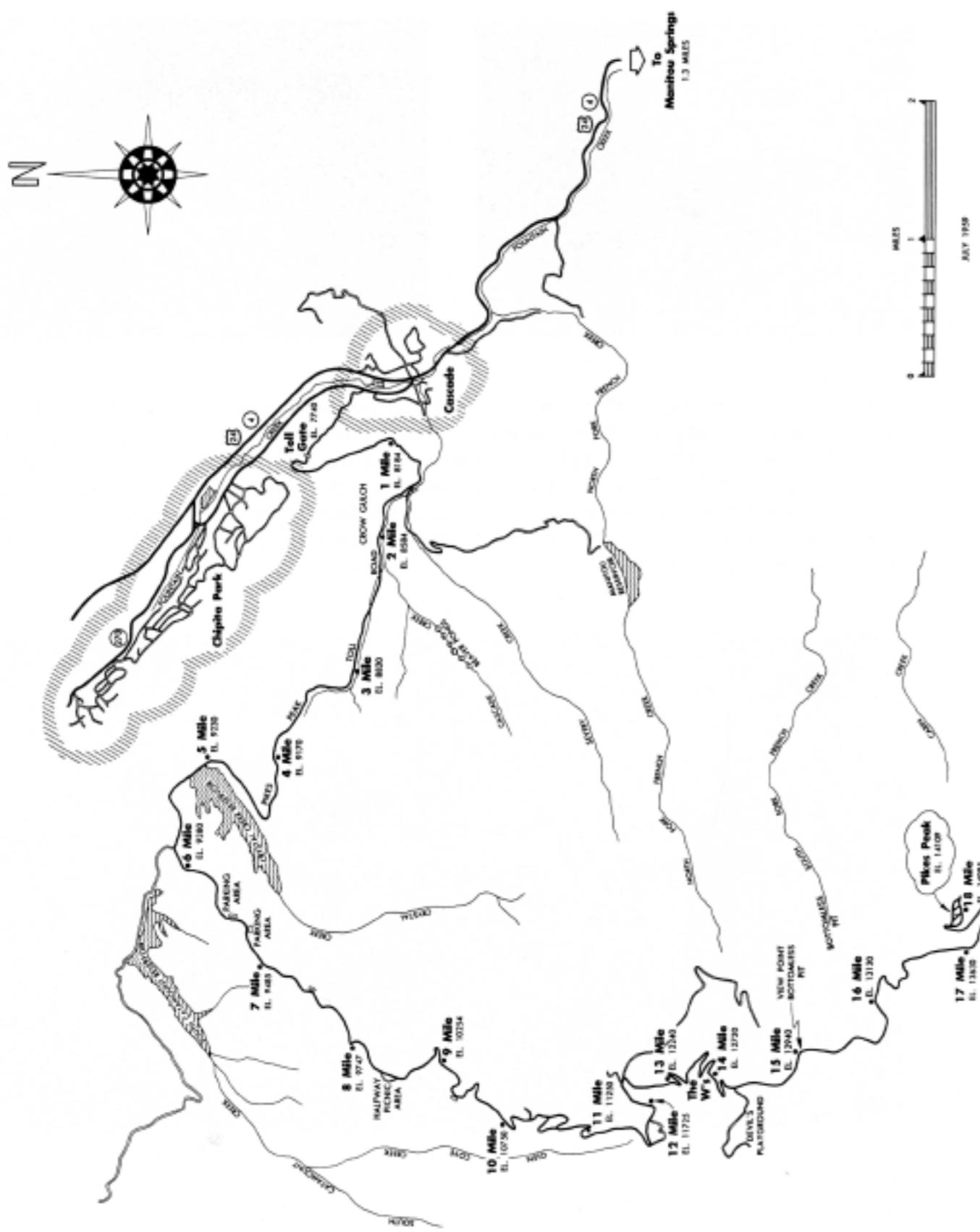
1964



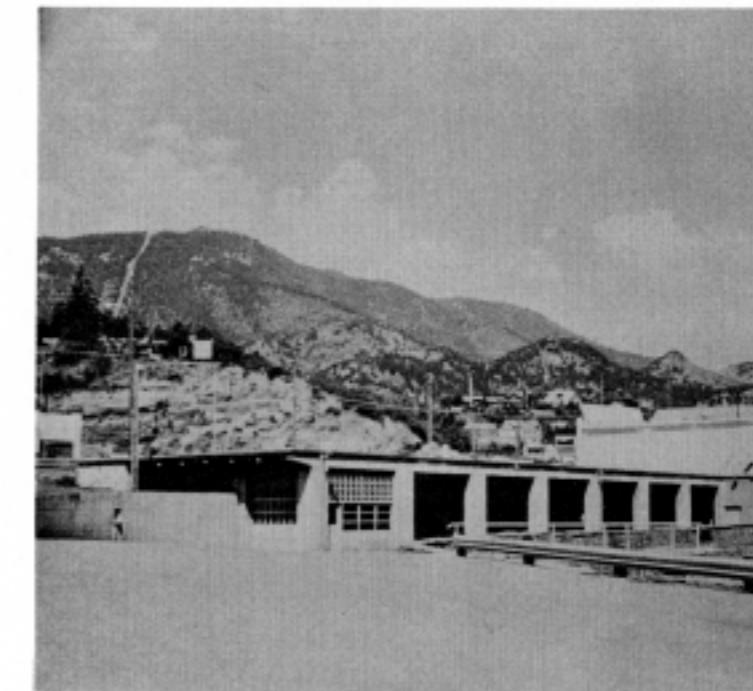
The Desert Proving Ground began in 1953 on its present site. The Phoenix Laboratory was the headquarters for desert operations prior to this time, dating back to 1937 (left, above). The road system (opposite) now has a total of 17 miles. A section of the 5-mile Circular Test Track is in the background of the aerial view (right, above) of the building area. Below is the entrance to the Desert Proving Ground and the new administrative building. More details of the desert operations and facility are at the end of this picture story.



## PIKES PEAK TOLL ROAD



## PIKES PEAK



All-weather testing is accomplished at the sites in Milford and Arizona; however, there was still an important facility lacking -- mountainous driving. To correct this condition, the Pikes Peak Headquarters (above) was opened in 1954 in Manitou Springs, Colorado, as a garage and service facility in connection with testing being done on the Pikes Peak Road (below and opposite).



BUILDING AREA



The view above was photographed in 1926. From these humble beginnings sprang the world's largest automotive Proving Ground - now covering 4011 acres, approximately 2 miles by 3 miles. The view below is of the same area as it looks today.



GATE HOUSES



The photo above was for thirty years the view of the gatehouse as you approached the Proving Ground. Built in 1926, it housed our Plant Protection men and telephone switchboard operators until 1956, when they moved to the new Plant Control building in the center of the picture below; the Medical Department is also in this new building. The old building had such a countrified, cozy, cheerful appearance a lot of "Old-Timers" hated to see it go; but with the improvements and changes, it had to be removed (or have a tunnel through it for the traffic circle for that is where it was located - in the roadway of what is now DuPont Circle). After seeing the beauty of the building and landscaping below, the qualms about the old building soon passed away.

The Administration Building to the left was built at the same time for five departments: Business Administration, Executive, Personnel, Plant Engineering, and Technical Data.



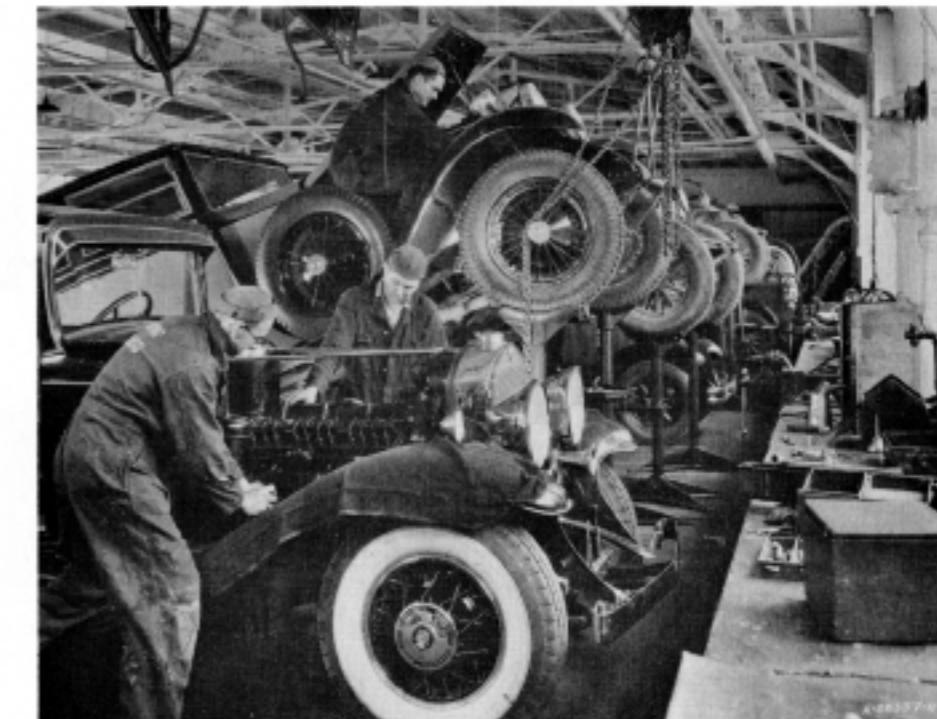
### GAS STATIONS



The first gas station and gatehouse (left, above) was soon replaced by the sturdier building on the right, which was erected in 1926. One or two pumps dispensed all the gas that was needed. Today's automated gas station (below) has 12 pumps dispensing regular fuel, premium fuel, diesel fuel oil, and a number of special fuels. Also, a special pump to test fast-fill of automobile gas tanks is located here. This gas station has a storage capacity of 86,000 gallons. It is operated by the Material Handling Group of the Business Administration Department.



### PROVING GROUND GARAGE

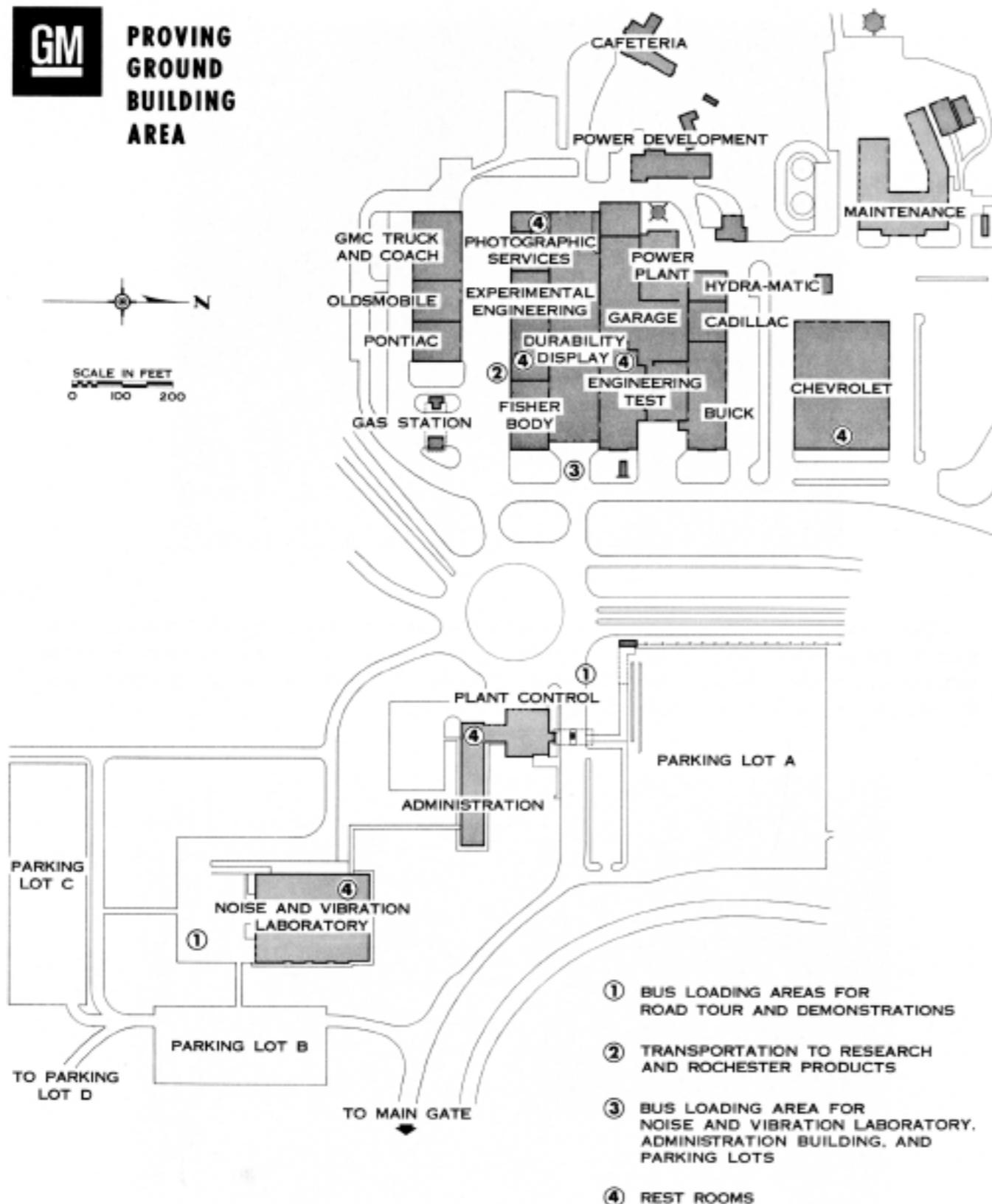


These two views are of the same area with almost forty years separating them. The garage above was well-equipped for those days, but would be less than minimum by today's standards. Notice the difference between the overhead lifts (above) for raising the car and the present day under floor hoists (below).





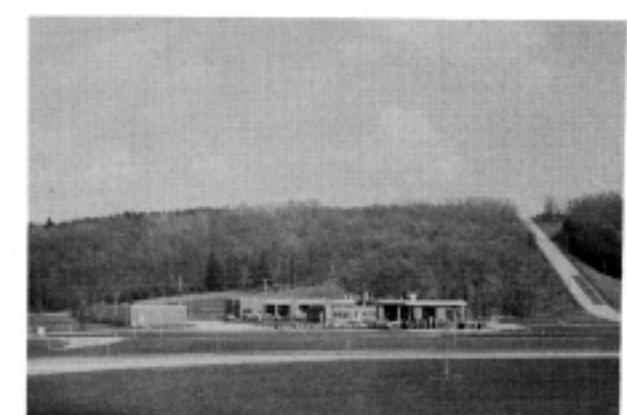
PROVING  
GROUND  
BUILDING  
AREA



DIVISIONAL AREAS



In the early days all of the car divisions and GMC Truck and Coach had working quarters in half of the first building. The picture (left, below) shows the present Chevrolet building. There are, today, 14 resident divisions at the Proving Ground and more space is allocated to each one as need and availability can be coordinated. The building plot (opposite) was used as a guide during the 40th Anniversary celebration and shows the location of 9 resident areas. Ternstedt, Allison and Euclid have representatives here also; the former is in the Fisher Body area, and the last two are at the Military and Heavy Vehicle Area. In addition, Rochester Products and Research Fuels and Lubricants have quarters at the Building 42 Group (right, below).



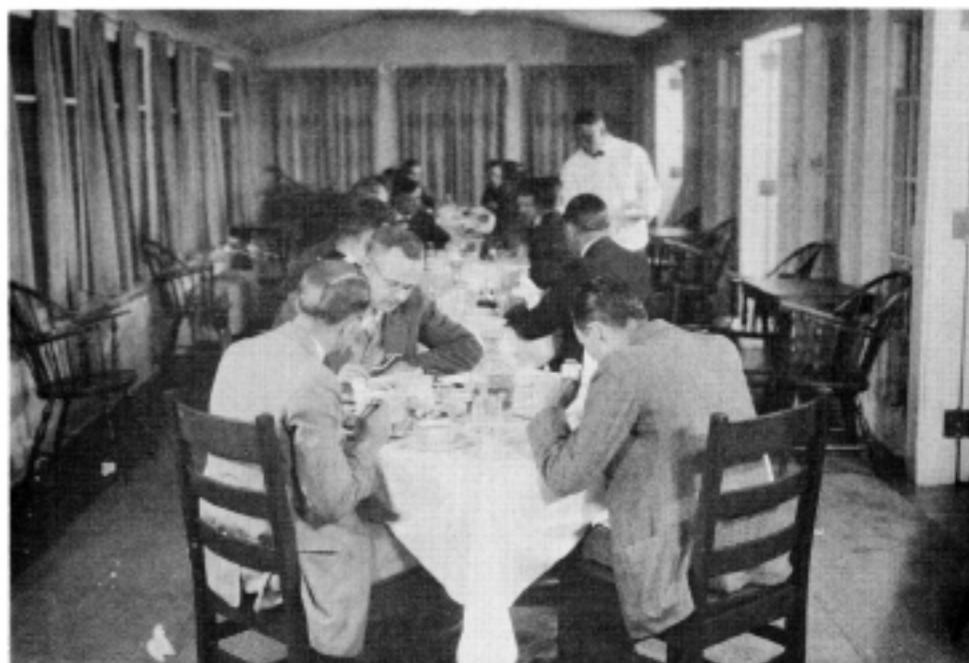
## ENGINEERING TEST CREW



This classic could not be left out of this picture history. The Engineering Test Crew consisted of "Irish" Conely\* driving, Morris Muzzy behind the car, and from left to right are "Ernie" Farrell\*, Neil Coppens, "PeeWee" Pearsall, "Cliff" Harter\*, Leon Filloon, "Tillie" McCourt and "Ray" Phillips. The tests these men ran were reported on large charts and displayed in a Chart Room where the General Technical Committee and other interested personnel reviewed the results here at the Proving Ground.

\*Deceased.

## CAFETERIAS



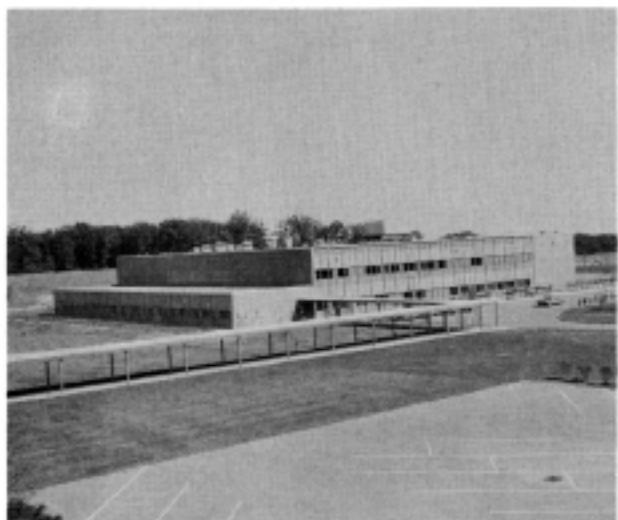
The room above was known as the "Sun-Porch" at the cafeteria when it was built in 1924 and is now the middle room of the cafeteria. This room was used only when they had a crowd. Ordinarily a small grill room with 3 tables seating 4 each was ample. The doors to the right led to a room that was a lounge with leather upholstered furniture until about 1950, and is now part of the seating capacity of the cafeteria. Our own Food Services and Living Quarters Department handles all meals that are served.



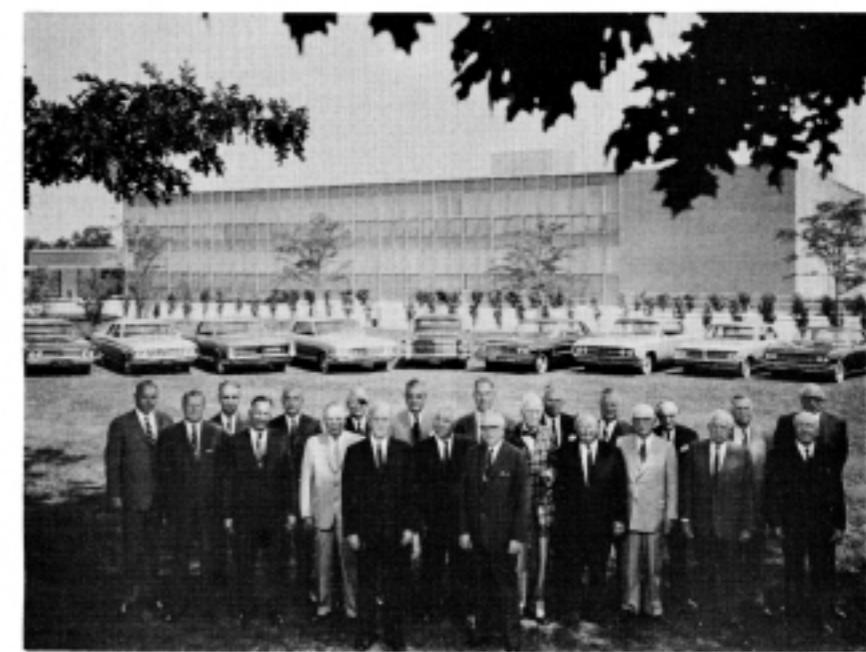
## NOISE AND VIBRATION LABORATORY BUILDINGS



The original "Sound Laboratory" was built in 1937 and is now used by Engineering Staff - Power Development. Even with a sizeable addition, the building was outgrown by a rapidly expanding interest in eliminating noise and vibration problems. In 1961, these activities were moved to the new Noise and Vibration Laboratory. This building contains the most modern equipment and rooms for testing vehicles and components, such as the acoustically treated chassis dynamometer with its three elevator platforms (below).



Even in 1925 the Proving Ground was a favorite gathering place for executive meetings, new automobile shows, etc. Not only is it centrally located among all the car divisions, but it has always been a beautiful, peaceful countryside away from the hectic turmoil of the city. The General Motors Board of Directors met here in 1963 for a new car show (below).

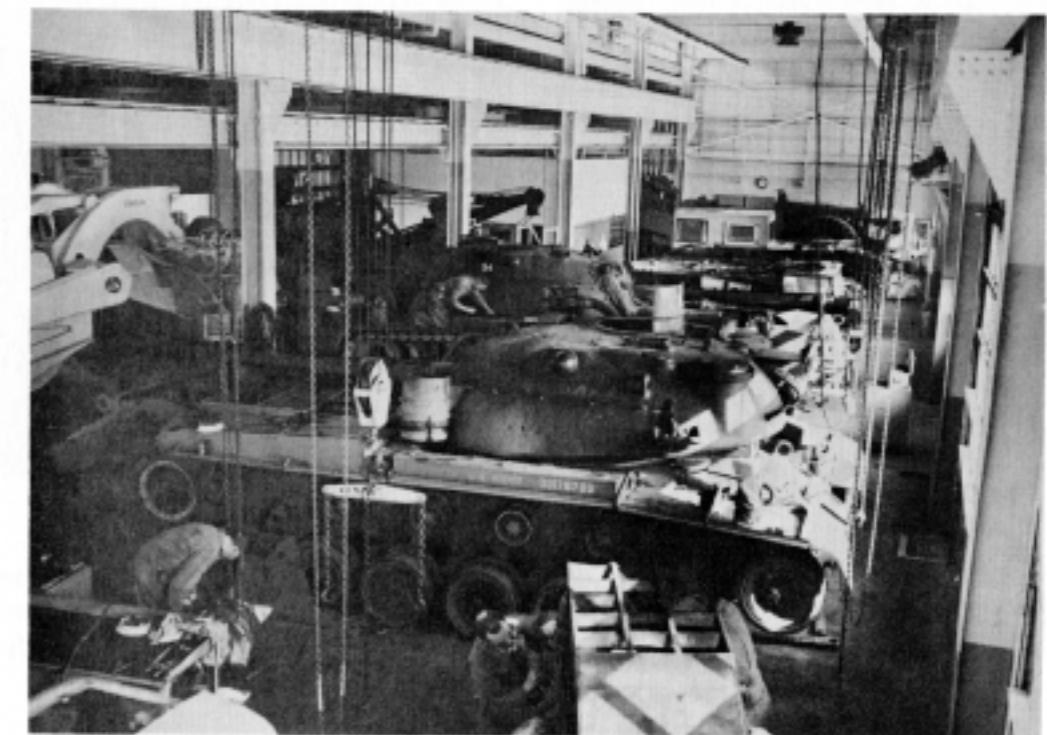


MILITARY AND HEAVY VEHICLE TEST AREA

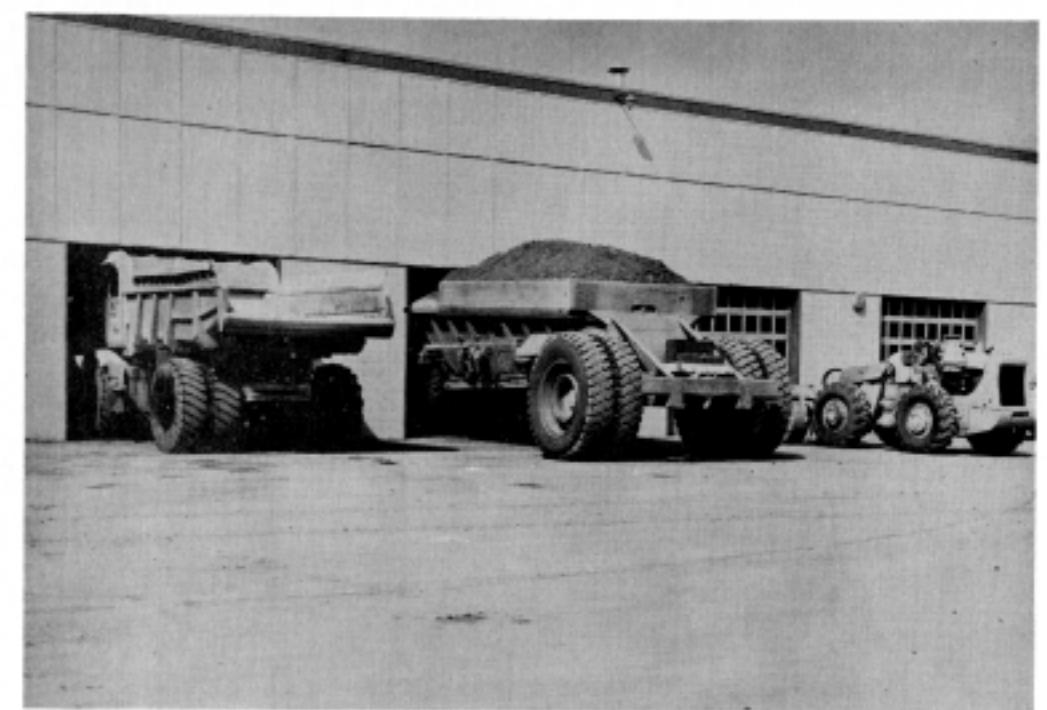


The Military and Heavy Vehicle Area, started in 1951, is separated from the Commercial Vehicle Area for safety and road reasons. These heavy vehicles are hard on a road system built for normal highway vehicles and they require different types of roads and terrain for complete testing. The picture above shows the office and garage buildings. Below is pictured the various types of vehicles tested on a section of the heavy vehicle road system.

HEAVY VEHICLE TEST AREA



These photos show some of the vehicles tested at this area and how some of the Euclid equipment is so large, it has outgrown the garage facility.



## DURABILITY TESTING



Durability testing of the new model year production cars has always been one of the main functions of the Proving Ground. The 24% Hill on the route has changed considerably from what it was in 1924 (pictures above) as have many of the other roads. The basic schedule as we know it today originated in 1934.

The 1964 test fleet included 41 domestic and 5 foreign General Motors and competitive makes. Each car completed 36,000 miles on the 27.83-mile schedule. The main change this year was from the Oval Test Track to the Circular Test Track.

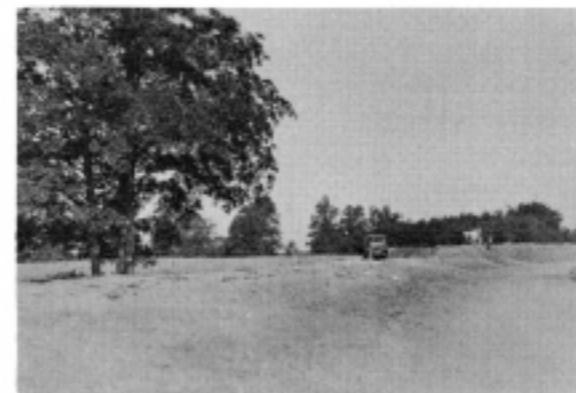
Every year after completion of the run the cars are completely disassembled, every part tagged, and laid out on tables as shown below for the 1964 fleet. Corporation engineers and executives from all over the country are invited to come and inspect the display to see how the various components of the cars withstood the durability test. This year over 6000 people visited the domestic car display in a period of six weeks.



## CONSTRUCTION METHODS OF 1924 - 1926



Horses labored at carrying away unwanted dirt.



Filling Northwest Super of Oval Test Track.



Laying concrete on straight section of Oval Test Track - 300 ft per day was considered very good.



East Super Exit Transition-Gravel bed prepared for concrete surfacing.



East Super - Transverse Forms being placed before concrete pouring.

CONSTRUCTION METHODS IN  
1963 FOR CIRCULAR TEST TRACK

The Plant Engineering Department made the Plans and Specifications for this track and supervised all operations.



Earthmovers Preparing Base Grade



Laying Sand Cushion



Compacting Sand Cushion



Spreading Concrete - Lane 4



Flexplane in Operation



General View of Concrete Laying Operation - 2000 ft per day was normal paving.

OVAL TEST TRACK



In 1924 the Oval Test Track followed the same general path that it follows today, but then it was narrow and of gravel. The north side of the Track was the East-West Straightaway; these roads were separated in 1925. The view above is of the northwest super. By 1926 the Loop was widened and concreted as shown below in a view of the East Super. The straight portions were 30 ft wide and the supers, 45 ft wide.



OVAL TEST TRACK



The 1928 3-lane wide North-South Straightaway paralleled the west side of the Oval Test Track and it still does today, but both roads have been widened as shown in the photo below. The straightaway is now 3-lanes wide each direction with speed-designed turnarounds at each end. The Oval Test Track is 50 ft wide in the straight portions and 65 ft wide in the supers. The Test Track was widened on the inside to accommodate the heavier volume of test traffic.

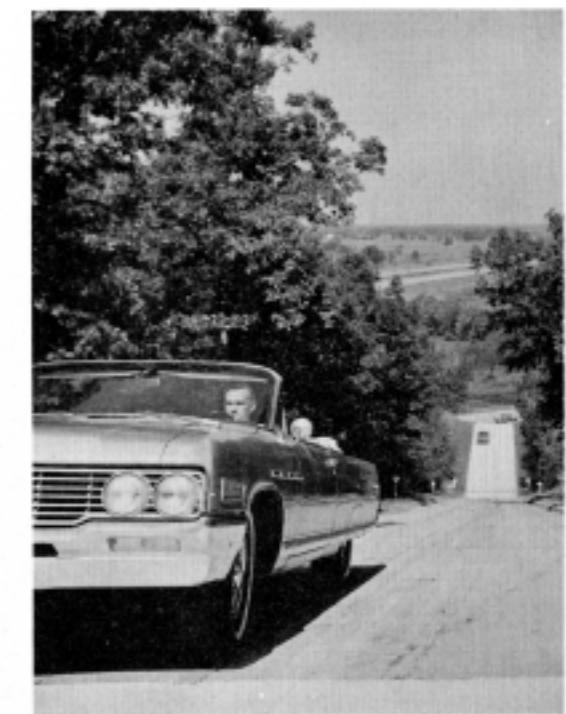


TEST HILLS



The 1928 car above is climbing a 25% gravel hill. The tests were rugged even then. In the late '20s in winter on week-ends families gathered here for toboggan parties.

The 16% concrete hill, left below, constructed in 1954 is in this same area. The 27% concrete hill on the right constructed in 1937 is a replica of a hill in San Francisco.



TEST HILLS



These cars are on the 11% test hill, in 1925. If you notice closely, the cars are to the right of a road junction. The road to the left was the 7.2% test hill which blended into the 11% originally. These were both 2-way roads. Today the up-hill roads are separated as shown below and have separate return roads.

BATHTUB



This concrete trough filled with water is the original "Bathtub" constructed in 1925. Today we test in a trough 1000 ft in length which was built in 1941. We look for the slightest little leak, for soaked brakes, or how well the car design keeps the water from splashing on the windshield, etc. In earlier days it was a test to see how wet the driver would get.



## ROADSIDE SAFETY



Roadside Safety has been an important study here at the Proving Grounds for the last several years, so that if a driver inadvertently leaves the roadway he has room to recover control of the car before having an accident. Not so in the early days as shown by the stones along the roadway in the above view. If a driver left the roadway he was in trouble immediately. The view below is of the Ride Road where the Roadside Safety Campaign started in the middle '50s and has since been inaugurated wherever possible on the Proving Ground road system.



## NEW ROADS

The roads below have been constructed on property acquired since World War II.



The Circular Test Track, completed in 1963, is 4.5 miles long, 70 ft wide, and is perfectly level.



The North-South Straightaway and turnaround loops completed in 1955, stretch out for 3 miles. The straight, level section is over 2.5 miles long in each direction.



The 7.2% Test Hill, constructed in 1954, has a uniform grade for 2715 ft and a high speed turnaround at the top of the hill.



The Truck Test Loop, constructed in 1955, is 2.1 miles long with hills, curves, and cross ditches.

## MORE NEW ROADS



The Ride and Handling Loop, constructed in 1958, is 4 miles long and has several types of surfaces and curves for testing automobile maneuverability.

## MAINTENANCE EQUIPMENT



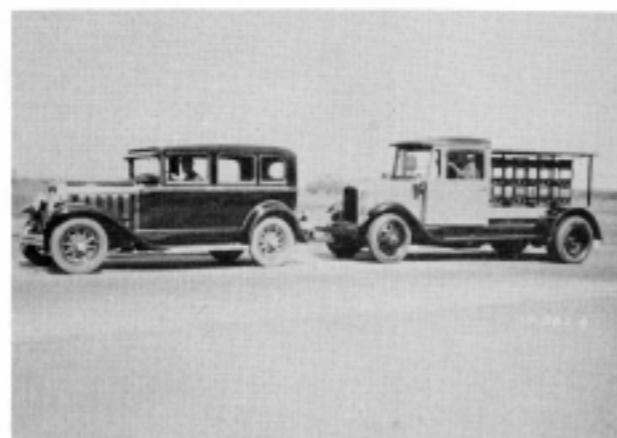
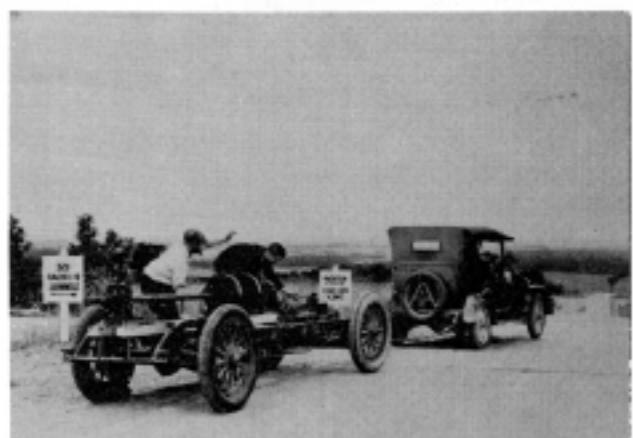
The road maintenance equipment has improved from the road grader shown above to the newest grader (below) used by our Maintenance Department.



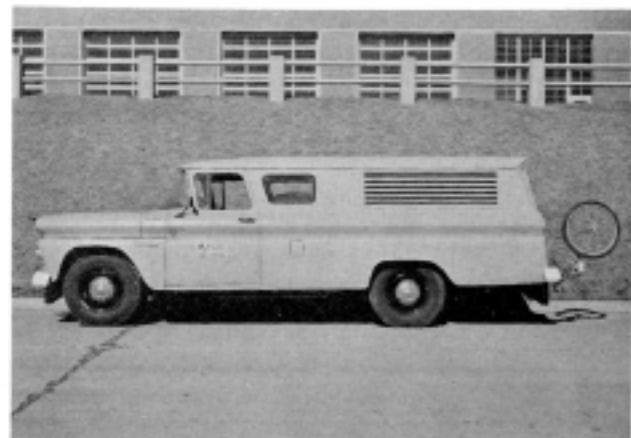
The new 5-mile Circular Test Track is entered from inside the loop via two overpass spans. The one above crosses the new track and the Heavy Vehicle East-West Straightaway. The other span is to the left and overpasses the Oval Test Track and the East-West Straightaway. The front cover is an aerial view of the whole area.



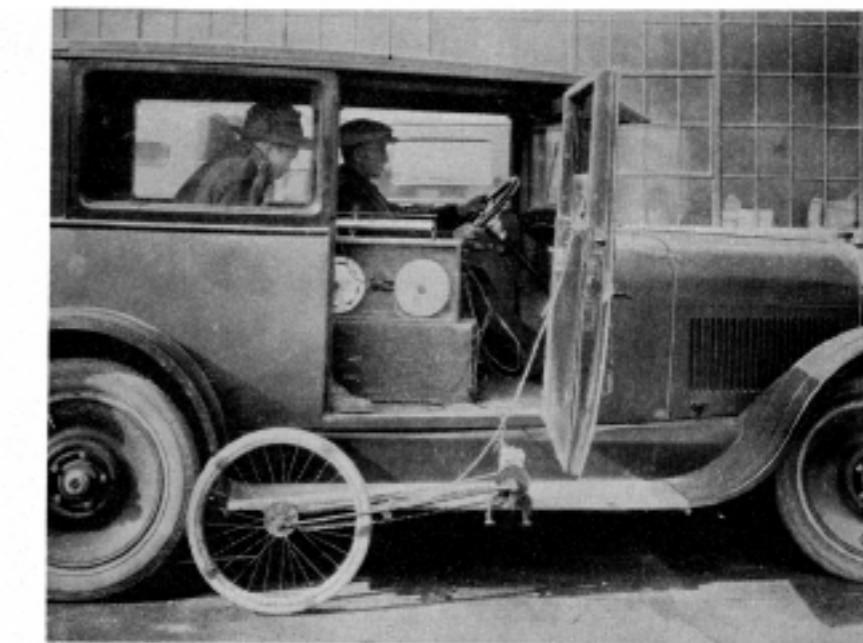
## TOWING DYNAMOMETERS



The two earliest towing dynamometers were forerunners of the equipment used today. The truck on the left below is used on car tests and the one on the right is for heavy-duty vehicle tests. Both have electric brakes, electronically controlled.

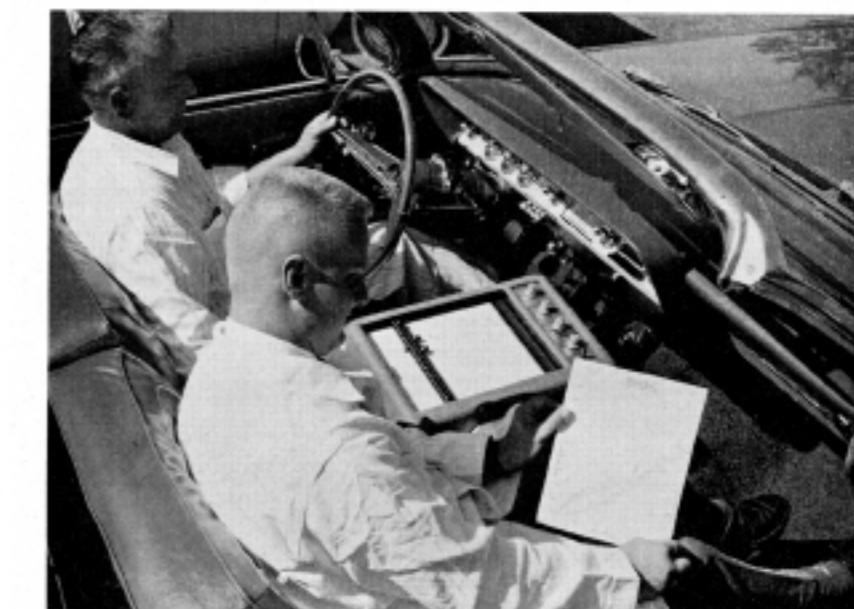


## ACCELERATION EQUIPMENT



Geared to fifth wheel on the running board of this Oakland coach, the spark accelerometer measured distance against time. Electric sparks made pinholes in a paper tape at one- and ten-foot intervals. A clock ticked off half-second marks.

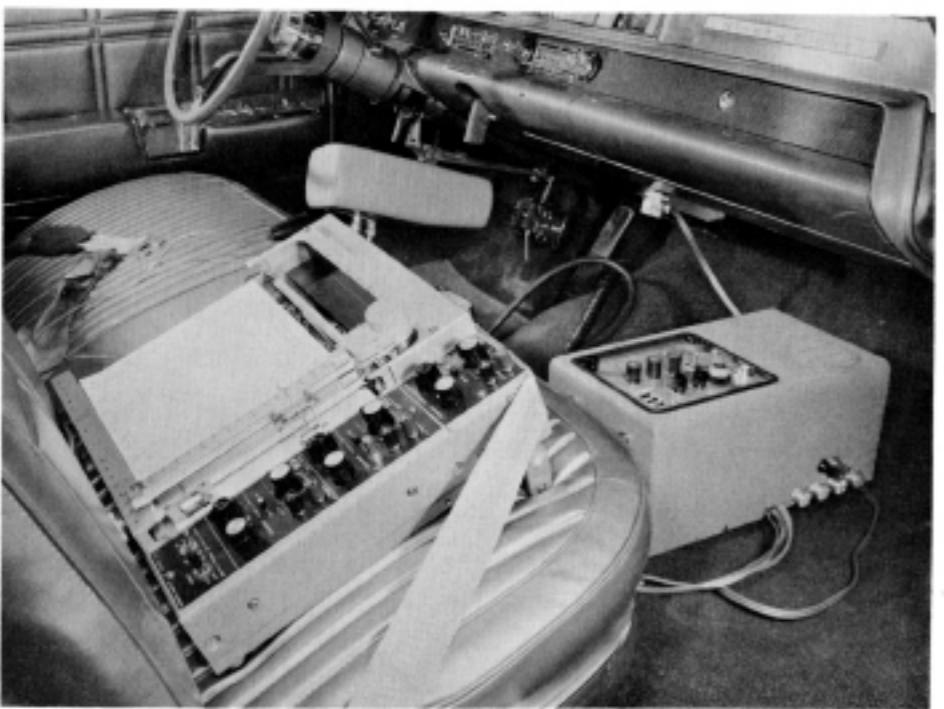
Distance and speed vs time nowadays is automatically plotted on a performance recorder (on the front seat between driver and test technician) as the test is performed, thus eliminating several hours of calculating and plotting time. Most of the equipment used for testing by the Engineering Test Department has been developed and improved over the years by the Experimental Engineering Department. It is designed for such a special use, it is not commercially available.



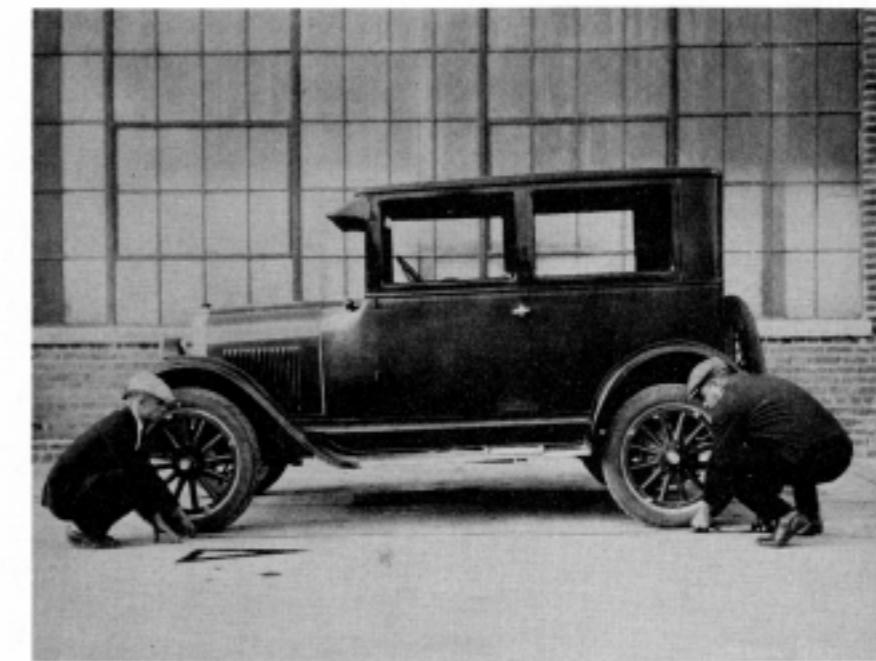
## BRAKE EQUIPMENT



This early instrumentation measured brake pedal pressure and deceleration. It was powered by a separate storage battery. The modern brake tester, below, has a "mechanical foot" that hits the brake pedal at a predetermined pressure. Instrument on the floor at right plots final deceleration curves during test, saving many hours of engineering time.



## BODY DIMENSIONING



Tape measure and triangle were two basic tools for making vehicle dimension measurements in the late 1920's.

Body dimensions since 1934 are both more precise and more detailed. Exact height is determined by the hydrostatic gauge in the right background (below) which is connected by tube with the indicating head on top of the car. Transits on straight edge rails are used to check lateral dimensions of various parts of the car. In the seat is a 1961 model, 167-lb manikin which is used to measure seat deflection.

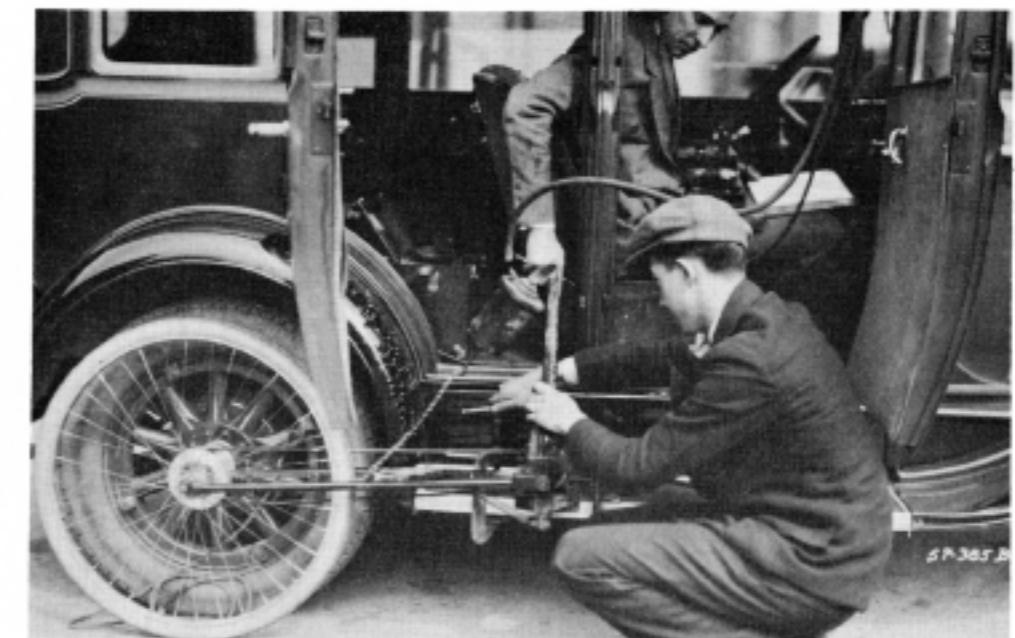


## FIFTH WHEELS

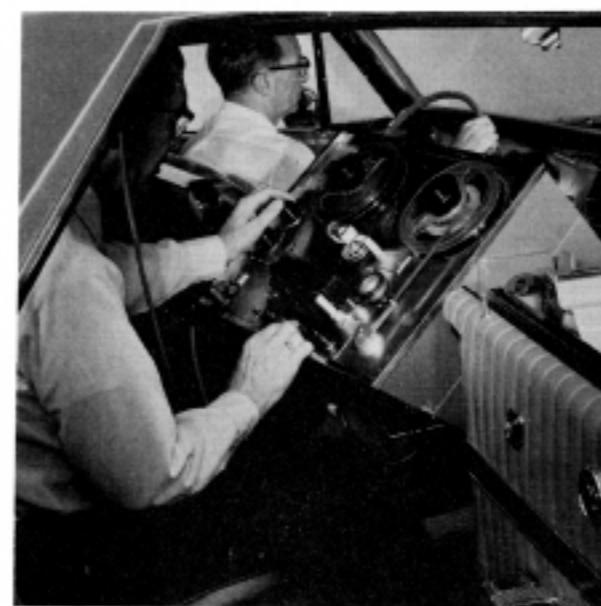


Many tests were run on an open-air chassis. The early "Fifth Wheel" of 1924 operated on the same principle as today's fifth wheel, but the design and construction were not as well engineered. The instrument indicates accurately the speed of the vehicle. With running boards passe', the wheel usually is attached to the rear bumper.

## NOISE TESTS



Engine and body noises were detected and measured by use of the audiometer above. The engineer "listened in" to make a record of noise intensity over the full range of speed. Today the noises are recorded on tape in the test set-up on the left. This car is connected by cable to the test car and later a jury of engineers "listen in" and individually appraise the noises compared to a base condition.



#### STEERING EFFORT EQUIPMENT



This auxiliary steering wheel was rigged on a 1925 test car to measure steering effort while the car traversed the steering effort curves between Buildings No. 1 and 2. In 1964 the auxiliary steering wheel works on the same principle as the 1925 version, but the effort is measured and recorded electrically. The steering effort curves are now on the Skid Pad at the east end of the E-W Straightaway.

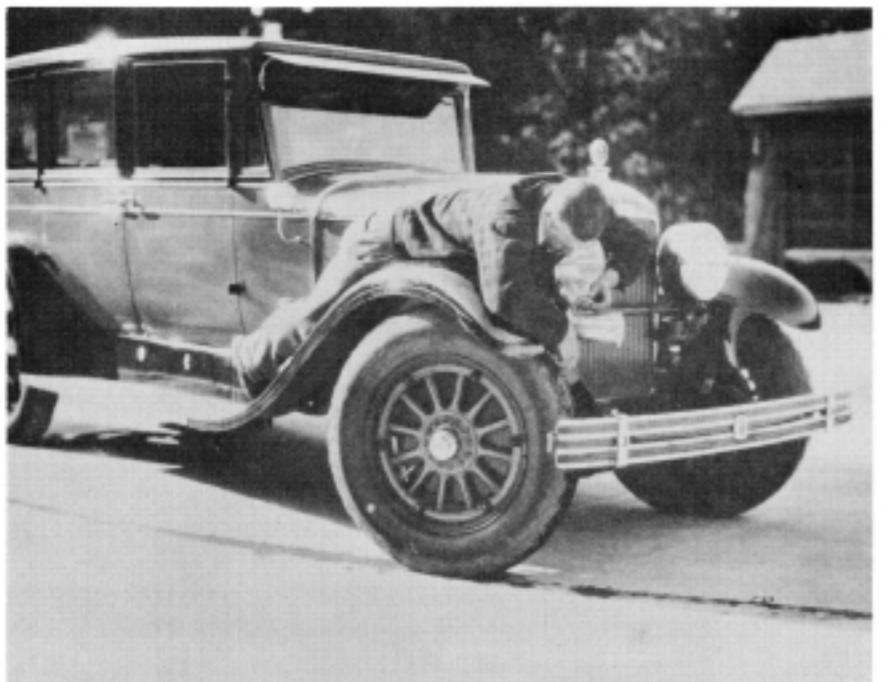
#### FUEL ECONOMY EQUIPMENT



A five-gallon can, two burettes, a bicycle pump, piping and tubing comprised the 1924 fuel measuring apparatus. Today a complete record of a car's performance and fuel economy is automatically indicated on the console below.



OTHER OLD TEST EQUIPMENT



By wetting the front tire it was possible to measure a car's turning radius from the tire print. Fenders aren't built for this type of measurement any more.

Clutch pedal pressure -- very important in the pre-automatic transmission days -- was measured with this "fish-scale" gadget.



MORE OLD TEST EQUIPMENT

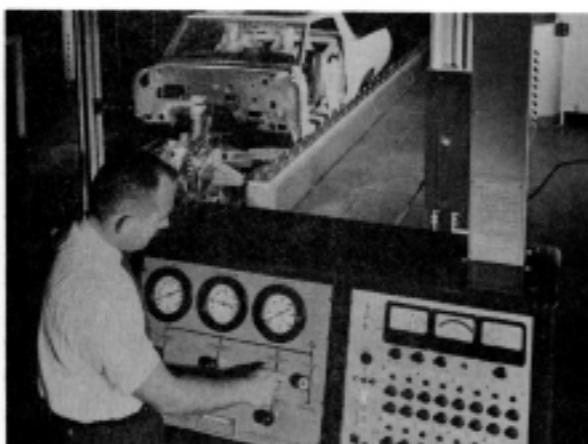
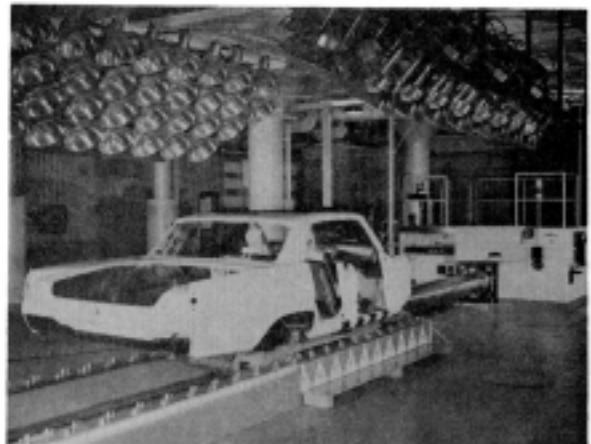


This was how undesirable reflections of interior body hardware were spotted in the 1920's. A man with a Coleman Lamp walked around the vehicle while a man inside noted objectionable glare.



This apparatus was used for measuring idle fuel consumption.

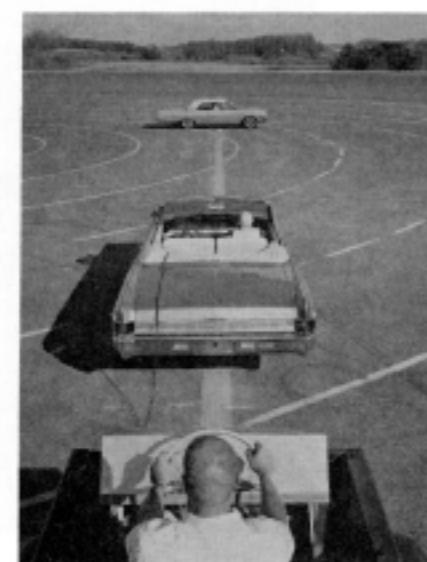
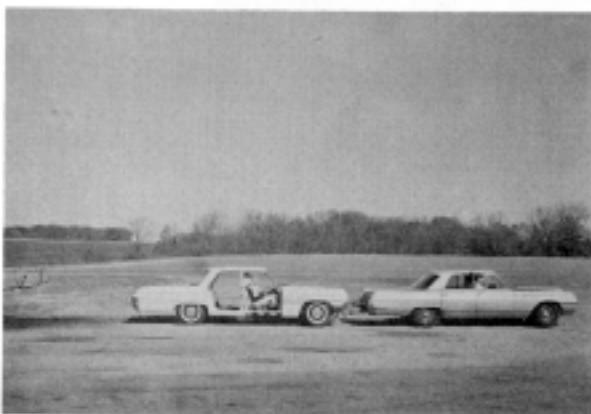
## SAFETY TEST EQUIPMENT



The Impact Sled installed in 1962 (above), is the newest equipment for testing whole vehicles or components and is located in the basement of Building No. 7. The Experimental Engineering Department is in charge of all Safety Tests. High reverse accelerations, simulating crash deceleration conditions, can be exerted on the item being tested and the tests repeated any number of times. The bank of lights are used in connection with high-speed photography, which is almost always part of the test procedure. The console on the right controls all equipment.

The Snubber Test equipment, in use since 1955, (left below), is an outdoor facility and can be used only in good weather for the same type of tests as are done on the Impact Sled.

The Remote Steering Equipment (right) is used in an actual crash test.



## COMPUTERS



The first Analog Computer was installed in 1958 in the Administration Building under the control of the Noise and Vibration Laboratory. The computer was moved to the Noise and Vibration Laboratory in 1961 and since then 2 more computers have been installed. They are used to simulate and solve vibration or related problems.

The Digital Computer, (below), installed in 1962 in the Administration Building, solves both engineering and commercial problems and is operated by the Technical Data Department.



## DESERT PROVING GROUND

The Desert Proving Ground is another chapter in the history of General Motors Proving Grounds. It is operated under the direction of the Director at Milford and the Manager at Mesa and maintains a staff of 142 personnel. The facility is maintained and personnel furnished mainly for the use of divisions and for special tests or surveys of common interest to all divisions as requested by the General Technical Committee. Test techniques pertaining to types of tests peculiar to the Arizona environmental conditions are developed. The photos with captions show some of the test roads and some areas where desert testing varies from that at Milford.



5.0 Mile Circular Track



1-1/2 Mile Straightaway



6.0 Mile Dust Course



50-ft Bathtub



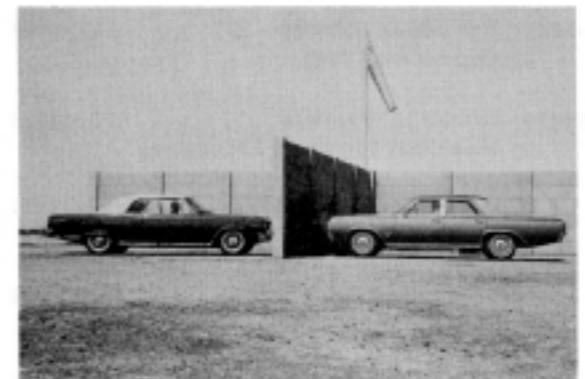
The three-celled roofless soak shed provides maximum protection from the wind for soaks and idles associated with vapor-lock testing.



Special air-conditioned room for charging car air conditioning system or checking specifications prior to air-conditioning test on road system.



Outdoor Service



The Idle Windbreaks allow idling or soaking in full sun load while sheltered from the wind, regardless of wind direction or sun angle.



Rack area for "direct" or "under glass" exposure of paints, plastics, fabrics, etc. to the high solar radiation intensity and low humidity Arizona environment.



Main Garage

**25 YEARS OR MORE OF GENERAL MOTORS SERVICE**

44 years	William J. Johnson Engineering Test	7- 6-20	LaVerne B. Lee Chevrolet	10-22-28	29 years	Maynard H. McFarlane Maintenance	2- 4-35	J. G. Adams Personnel	11- 6-36		
39 years	Lyman L. Daniels Noise and Vibration Laboratory	3-12-25	35 years	Alfred Cooper Pontiac	1-26-29	Jesse Simmons Pontiac	2-18-35	Lester E. Slocum Chevrolet	11- 6-36		
	Dewey Wollenhaupt Garage	7- 7-25		Herbert E. Hollingdale Chevrolet	6- 3-29	Thomas S. Hancock Personnel	3- 4-35	W. C. Klekot GMC Truck and Coach	11- 6-36		
	Anton Neistroy Cadillac	7-27-25		William A. Seger Chevrolet	6-10-29	John Seafuse Oldsmobile	3-12-35	Donald D. Epley Power Plant	8- 2-37		
	L. J. Kinstle Buick	12-14-25		Melbourne L. Sloughter Chevrolet	8-21-29	Daniel Stegenga Technical Data	4- 1-35	George M. Miley Garage	1-17-38		
38 years	George A. Stonex Desert Proving Ground	6-28-26	34 years	John J. Carlock Chevrolet	9-11-30	Daniel Bailey Pontiac	7-11-35	S. L. Polan Oldsmobile	1-29-38		
	Charles F. Pless Engineering Test	7-12-26		Arlington D. Newman Chevrolet	9-12-30	Nelson Smith Living Quarters	7-17-35	Wilbur B. Johnson Desert Proving Ground	10- 1-38		
	Archie Auker Buick	9-11-26		Fred W. Caswell Chevrolet	11- 7-30	Crawford E. Muschott Buick	7-31-35	Carl L. Bidwell Chevrolet	10-17-38		
	Lloyd E. Pearsall Experimental Engineering	10-27-26	32 years	John R. Cord Military and Heavy Vehicle	11-27-32	Wendell H. Boring Buick	9-23-35	M. C. Rohr Pontiac	10-20-38		
	Tilden F. McCourt Desert Proving Ground	12- 6-26	31 years	Forrest R. Cavenee Chevrolet	7- 1-33	William A. Arscott Desert Proving Ground	11-20-35	Lawrence E. Brown Technical Data	11-21-38		
	Dallas C. Haughton Garage	12- 9-26		William Heil Experimental Engineering	7-11-33	Forrest Skarritt Pontiac	12- 3-35	Ralph H. Miller Buick	11-29-38		
37 years	Marion L. Beam Engineering Test	3-11-27		Paul A. Anderson Chevrolet	8-21-33	28 years	Alfred Lloyd Pontiac	2-24-36	25 years	Matt L. Stevens Engineering Test	3-28-39
	Robert L. Darling Chevrolet	4-20-27		Clarence A. Buxton Maintenance	8-21-33		Clarence J. Hackbarth Maintenance	7-15-36		Andrew B. Krogstad Garage	3-29-39
	Harold J. Brophy Noise and Vibration Laboratory	9- 7-27		Gerald R. Swann Garage	8-28-33		Harold E. Cavenee Chevrolet	7-29-36		Cecil F. Bourns Maintenance	4-19-39
	Clare L. Caswell Chevrolet	10- 9-27		Elbert E. Seger Engineering Test	9- 1-33		James Roberts Pontiac	9-25-36		Wilbur S. Campbell Garage	4-25-39
36 years	William G. Baker Chevrolet	3- 7-28		William H. Hance, Jr. Garage	9-24-33		Willis Coryell GMC Truck and Coach	10-28-36		Louis C. Lundstrom Director	6-16-39
	C. R. Lunn Rochester Products	6-12-28	30 years	F. N. Reid GMC Truck and Coach	2-27-34		George F. Brigham, Jr. Garage	10-28-36		Irving W. Lancaster Engineering Test	8-28-39
	Robert D. Nauss Power Plant	6-18-28		Richard Ballek Pontiac	3-22-34		Clayton S. Childs Garage	10-29-36		Donald E. Macfarlane Safety and Plant Protection	10-17-39
	George Robinson Pontiac	7-14-28		H. D. Haughton GMC Truck and Coach	10-25-34		Herbert Ketchum Pontiac	11- 4-36			
	Maurice E. Thompson Chevrolet	9-12-28		David C. Apps Noise and Vibration Laboratory	12- 1-34						

## PROVING GROUND SECTION PERSONNEL

### BUSINESS ADMINISTRATION

Bailey, Donald G.  
Beers, Harold A.  
Buckler, Warren A.  
Burns, Loren H.  
Caswell, James F.  
Darrow, William L.  
Edick, Norman L.  
Ehgots, Duane F.  
Eikhoff, Arthur W.  
Gabris, Joyce K.  
Germane, James S.  
Gmelich, Jack  
Goad, David L.  
Hagman, Gerald D.  
Hancock, Thomas S.  
Harbron, Helen V.  
Hess, George W.  
Hogan, Everett L., Jr.  
Kanitz, Wayne W.  
Lee, Jerome L.  
Lomik, Joyce A.  
Lovejoy, C. William  
Michaels, Jere L.  
Peace, Judith I.  
Radabaugh, Margaret L.  
Reichardt, Muriel A.  
Sharp, Sophia C.  
Simpson, Marlin D.  
Sveska, James  
Tyler, Glenel D.  
White, Oral W.

### ENGINEERING TEST

Anderson, David D.  
Bambas, Edmund J.  
Beadle, Russell L.  
Beagle, Barbara W.  
Beam, Marion L.  
Bergin, Raymond J.  
Caswell, Clare N.  
Conely, Ada F.

Baldwin, Sara L.  
Elliott, Brenda C.  
Lundstrom, Louis C.  
Ottmar, Dale N.  
Podesta, John W., Jr.  
Riddell, Alene S.  
Skeels, Paul C.

### EXPERIMENTAL ENGINEERING

Arnold, Walter D.  
Ballmer, Robert B.  
Beebe, Mylia B.  
Biddle, William A.  
Brancik, Nicholas A.  
Brockmann, Richard K.  
Carpenter, Beatrice F.  
Cichowski, William G.  
Clore, James V.  
Cobb, Ralph M.  
Cook, Stanley O.  
Cubr, John J., Jr.  
DeCou, John E.  
Dunham, Russell J.  
Dunham, Scott D.  
Falzon, Raymond G.  
Field, William R.  
Fogle, Roy W.  
Fox, Hugo R.  
Freas, William S.  
Garland, Jack D.  
Gioia, Anthony J.  
Girard, Lewis S.  
Guckian, William J.  
Heil, William  
Herald, David W.  
Heurtebise, Byron T.  
Hilton, William R., Sr.  
Hoganson, Claude C.  
Hoover, Vernon F.  
Horchler, David D.  
Johnson, Richard B.  
Kaufman, Roger D.  
Kendrick, Jerry C.  
Kolhoff, Thomas R.  
Landon, George W.  
LeFevre, Robert L.  
Madsen, Frederick M.  
Malthby, Raymond W.  
Marks, Allan D.  
McGee, Robert H.  
McGinley, Joseph B.  
McKee, Eldon C.

### EXPERIMENTAL ENGINEERING (Cont.)

Meeker, Lynn A.  
Moriconi, Leonard E.  
Nelson, Wilton D.  
Painter, Richard O.  
Pearsall, Lloyd E.  
Peterson, Kenneth G.  
Prevost, Thomas G.  
Rayment, Donald G.  
Renaud, Eugene V., Jr.  
Richards, Joseph L.  
Rogers, Robert A.  
Rust, Norman  
Sheffler, Frederick T.  
Sink, William C.  
Smith, Robert W.  
Snyder, Charles L.  
Stahl, Rudolf H.  
Stark, Marvin K.  
Trites, Donald C.  
Turner, Jack W., Jr.  
VanHaaften, John A.  
VanNess, Lawrence J.  
Widmayer, Willard D.  
Wiese, Ralph W.  
Zachow, Herbert E., Jr.

GARAGE

Armstead, Keith M.  
Armstrong, Howard A.  
Bain, Roy J.  
Ballingall, David S.  
Baltrus, Leo C.  
Bandkau, Erwin H.  
Bandkau, Frederick W.  
Beagle, Edsel W.  
Beam, Bradley M.  
Bennett, James F.  
Berby, Francis L.  
Bidwell, Charles L.  
Bonfiglio, Nicholas P.  
Bourns, Norman D.  
Brigham, George F., Jr.

### Brigham, Walter C., Jr. Brown, John W. Bunker, Lynn Campbell, Wesley S. Campbell, Wilbur S. Carpenter, George F. Carr, Kenneth G. Caswell, Louis W. Childs, Clayton S. Crawford, George R. Davis, Glen C. Dawson, Eric G. DeSmet, Edmund E. DeWitt, Winfred V. Dietrick, Richard E. Disbrow, Jack O. Drozdowski, Edmund Felty, Eugene I. Fick, Basil C. Finney, Robert T. Fisher, Jon G. Flynn, Richard Foote, William H. Freeman, Harold D. Gardner, Kenneth L. Gates, George W. Geyer, Arthur S. Hance, William H., Jr. Haughton, Dallas C. Haviland, Verne C. Herald, Russell L. Hiebbner, Edward F. Hilton, William R., Jr. Hoaglin, Loyal S. Holman, Jack Kelley, Lee E. Krogstad, Andrew B. Larson, Ward Latimer, Arthur D. Latimer, John L. Mack, Jesse B. Marsh, Donald E. Miley, George M. Miller, Grant E., Jr. Misslitz, Charles B. Motschenbacher, Lyle R. Mullany, Joseph R. Pasco, Charles J.

Pasco, Jack R.  
Peach, Robert L.  
Peasley, Maurice F.  
Plummer, Gerald G.  
Pollock, Glen R.  
Powell, Clifford W.  
Powell, Richard A.  
Price, Clarence E.  
Qualls, Lonnie G.  
Raymond, Gerald B.  
Reading, Clarence S., Sr.  
Russell, Cecil R.  
Ryan, Francis D.  
Ryan, Maurice C.  
Small, Bennett  
Sprague, Claire J.  
Stafford, Calvin F.  
Swann, Gerald R.  
Tapp, Floyd J.  
Thompson, Gerald A.  
Timmons, Arthur  
Torrey, Harold F.  
Turner, Dwaine O.  
Velzy, Kenneth W.  
Voorheis, Roger C.  
Walden, James P.  
Warhus, Jack  
Watson, Homer N.  
White, Clyde L.  
Wilhelm, Robert J.  
Wollenhaupt, Dewey

### LIVING QUARTERS

Baker, Ernest  
Bryant, Allen G.  
Gordon, Howard  
Gorman, William L.  
Haymer, Sandy J.  
Moore, James H.  
Reeves, Harold E.  
Sewell, Douglas B.  
Smith, Nelson  
Thompson, Leonard G.  
Williams, Robert

**MAINTENANCE**

Amrhein, William J.  
Baker, John, Jr.  
Basman, Anthony J.  
Bourns, Cecil F.  
Bourns, Joseph D.  
Boyes, Paul E.  
Briskey, William J.  
Brown, Forrest J.  
Buccellato, Veto  
Buxton, Clarence A.  
Clark, Dewayne O.  
Clark, James R.  
Clark, James R. \*  
Cole, Thomas  
Cousins, James T.  
Crossley, Clarence C.  
Curry, William B.  
Dale, John V.  
De Forest, Clyde D.  
Dormire, Alvin J.  
Dundas, Clayton J.  
Fischer, Fredrick W.  
Fisk, Loraine C.  
Frank, Ray E.  
Goss, Alfred H.  
Goss, Donald W.  
Goss, Earl W.  
Grover, Ernest H.  
Hackbarth, Clarence J.  
Hansard, Charles E.  
Hawks, Clamon  
Hewlett, Cecil L.  
Highfield, Jerry L.  
Hogan, Everett L.  
Holtsclaw, Walter E.  
Hund, Henry J.  
Huskinson, James R.  
Jackson, Dave  
Kaltz, Clarence J.  
Keel, Edwin J.  
Leitz, Harold P.  
Loubert, Charles L.  
MacCaughan, James G.  
Matthews, Joseph W.  
Maurer, Aaron D.  
Maynard, Alvin E.

**MEDICAL**

McClure, Donald K.  
McFarlane, Maynard H.  
McGinnis, Jack D.  
McLaughlin, Edward G.  
McShane, James O.  
Mendham, John C.  
Mendham, Robert W.  
Mills, William M.  
Morgan, Russell E.  
Musolf, Adelbert J.  
Nichols, Estell E.  
O'Connell, Robert E.  
Olbrich, William A.  
Oxford, Robert E.  
Perkins, Auburn C.  
Phillips, Emeryson J.  
Powell, Glen A.  
Purdy, Charles W., Jr.  
Reader, Ivan G.  
Redman, Harold L.  
Reetz, Luther P.  
Reichardt, Robert R.  
Robley, John F.  
Rutter, Leslie W.  
Sandford, Frederick T.  
Skinner, Charles E.  
Skinner, Donald F.  
Smail, Vaughn M.  
Smith, Junior L.  
Smith, Norman H., Jr.  
Soule, Stanley  
Stevenson, Clarence T.  
Suzor, Leo E.  
Tarket, Robert T.  
Tressler, Walter W.  
Trikes, Socrates  
Ulrich, Michael J.  
Vradenburg, Earl A.  
Walker, Donald D.  
Walker, Wayne W.  
Wall, Joseph W.  
Walters, Carl A.  
Ward, Robert S.  
White, Louis H.  
Wright, Ralph H.  
Young, Harvey J.

**MILITARY AND HEAVY VEHICLE TEST**

Baker, James W.  
Barber, James B.  
Bourns, Gerald C.  
Bradley, Harold W.  
Brigham, Robert R.  
Cord, John R.  
Duty, Ramon J.  
Dymond, John F.  
Eneix, Harold E.  
Grimshaw, Earl L.  
Haynes, Patrick, Jr.  
Hess, John J.  
Hickmott, Stephen C.  
Huffman, Milner H.  
Mann, Charles N.  
Moore, George V.  
Near, Leon G.  
Reeves, Hazen C.  
Rife, Eugene W.  
Schwartz, Frederick R.  
Silver, Merrill J.  
Symons, Eugene W.  
Thompson, Robert E.  
Verellen, Frank D.  
Wakefield, Robert C.  
Webb, Alfred M.  
Wilson, Floyd S.  
Wilson, Joe J.

**NOISE AND VIBRATION LABORATORY**

Apps, David C.  
Armstrong, William H.  
Beadle, James L.  
Bidwell, Harold J.  
Bonvallet, Duane J.  
Bonvallet, Wayne A.

**NOISE AND VIBRATION LABORATORY (Cont.)**

Bristol, David L.  
Brophy, Harold J.  
Bryant, Robert W.  
Burgess, Gerald L.  
Carlton, Elbert N., Jr.  
Carpenter, Bonnie K.  
Clark, Carole S.  
Confer, Richard A.  
Daniells, Lyman L.  
Demorest, Donald R.  
Denkhaus, Roland F.  
Eby, James C.  
Edwards, Sonny G.  
Elliot, Charles B.  
Emme, Joseph H.  
Foster, J. King  
Foster, Ronald L.  
Gooch, Glen E.  
Groening, James A.  
Harris, Thomas A.  
Herzog, Henry M.  
Hillquist, Ralph K.  
Hillquist, Sharon M.  
Hobolth, Hayes M.  
Houk, William A.  
Houser, John W.  
Ingle, James N.  
Isaacson, Raymond D.  
Kirk, Pauline J.  
Kober, Adelbert B.  
Kolias, John T.  
LaBreche, Robert M.  
Larsen, Hugh W.  
Latimer, Donald L.  
Layton, John M.  
Lazenby, Raymond C.  
Locey, Marden M.  
Martin, Berthold  
McLellan, David R.  
Mowrey, John W.  
Muelling, Duane D.  
Nimmo, Philip E.  
Ortwine, Harold W.  
Perkins, Robert E.  
Qualls, Margaret C.

**PLANT ENGINEERING AND ELECTRICAL**

Reeves, Gordon L.  
Repik, Edward P., Jr.  
Richards, Michael G.  
Rinckey, Russell V.  
Root, Robert P.  
Savich, Thomas L.  
Sevigny, Lawrence R.  
Shedlowsky, James P.  
Siems, David T.  
Siford, James E.  
Sinke, Robert A., Jr.  
Slagle, Loy W.  
Smaltz, Gustave E.  
Smith, Ray B.  
Stewart, Howard D., Jr.  
Talaski, Carl E.  
Todosciuk, Mike A.  
Vincent, John H.  
Whittemore, Allan P.  
Wilson, Richard A.  
Woychowski, Harold J.  
Wurmlinger, Joseph P.

**PERSONNEL**

Adams, James G.  
Dobski, Theresa J.  
Jarvis, Esther L.  
Mays, Lauris H.  
McCormick, William B.  
McDermit, Michael C.  
Seaton, Robert S.  
Victor, Alberta

**CO-OP STUDENTS**

Bauchan, Michael L.  
Briggs, Dennis M.  
Briggs, Don W.  
Goodenow, Gary L.  
Hickok, William R.  
Jameson, Jamie F.  
Morrison, John R.  
Nichols, James L.  
Watrous, Thomas F.

**POWER PLANT**

Augustine, Joseph H.  
Baker, Robert W.  
Benjamin, Charles N.  
Boice, Carlton A.  
Carney, Edward J.  
Carr, Robert A.  
Childs, William W.  
Colton, Russell R.  
Epley, Donald D.  
Hickmott, Chester W.

#### POWER PLANT (Cont.)

Hunt, Richard L.	Mc
Johnson, Edward P.	Mc
Lawrence, Devere R.	Me
Line, Kenneth C.	Mu
McCall, Charles S.	Mu
Nauss, Robert D.	Na
Nealer, William P.	Pe
Nichols, Neil E.	Re
O'Dell, Ronald A.	Sch
Pattison, James M.	Sch
Phillips, Joseph D.	Sch
Prosser, Hugh M.	Sch
Trumpfheller, Marshall D.	She
Williams, Donald C.	Sie
Wooten, William L.	Sin
Young, Millard B.	Sin

## SAFETY AND PLANT PROTECTION

Arnett, Donald A.	TECHNICAL DATA
Ashton, John W., Jr.	
Augustine, John D.	
Bailey, Morrell V.	
Berglind, Jack G.	
Boyes, David F.	
Bretz, Gerald C.	
Buxton, Albert H.	
Cameron, Robert A.	
Casady, Elton A.	
Champlin, James R.	
Chkoreff, William M.	
Conklin, Florence M.	
Dean, Leonard L.	
Demko, Edward C.	
Dildine, Dick A.	
Forton, Jack D.	
Greve, Floyd L.	
Hewitt, Leo W.	
Ickes, Yvonne C.	
Jennings, Orville K.	
Krugh, Rex C.	
LaPlante, Frederick E.	
Lindahl, Clifford M.	
Long, Ralph W., Jr.	
Adams, Earl G.	
Baker, Barbara E.	
Baldwin, Burton K.	
Brink, Reo S.	
Brown, Lawrence E.	
Cain, Beverly J.	
Clore, Kathleen E.	
Crowe, Deralynn L.	
Davis, Paul W.	
Dunlap, Richard B.	
Grobbel, Charles L.	
Haas, Nadine E.	
Hacker, Lyle K.	
Herronen, Donald E.	
Hibbard, Theodore C.	
Hublick, James A.	
Huff, Richard H.	
Hyde, William F.	
Insley, Jeannette M.	
Justice, Richard L.	
Kennedy, Helen F.	
Kremer, James C.	

Macfarlane, Donald E.  
Mackey, Charles H.  
McClure, George A.  
McKimmy, Jacob L.  
Mendham, James M.  
Muller, Fredrick M.  
Munsell, Clarence L.  
Nauss, Robert E.  
Pennala, John E.  
Reading, Clarence, Jr.  
Schenden, Herbert J.  
Schirmer, Alfred C.  
Schook, George A.  
Schulz, Charles A., Jr.  
Sheldon, Roger A.  
Sieloff, Edward F.  
Simpson, Phyllis W.  
Small, Audrey J.  
Sobieski, David J.  
Sutton, Ronald H.  
Trierweiler, Clarence A.  
Walker, Jack C.

#### TECHNICAL DATA

Lea, Barbara E.  
Levenick, Richard L.  
Lunge, Evelyn J.  
McBride, Eleanore A.  
McC Casey, John B.  
McC Casey, Thomas P., Jr.  
Melzer, Donald D.  
Nelson, Arnold L.  
Nelson, Richard J.  
Newman, Mabel I.  
Oxford, Frances L.  
Packer, Charles W.  
Parker, Charles D.  
Petticrew, Mary  
Reid, Harvey H.  
Rininger, Arline R.  
Russell, Olga  
Stegenga, Daniel  
Vanator, George M.  
Vendercook, Robert M.  
Webster, Donald J.  
Zalewski, Casimer

DESERT PROVING  
GROUND

Allen, Robert E.  
Allen, Wilbur M.  
Allschwager, Merrill C.  
Antkowiak, Roman J.  
Antkowiak, Thomas P.  
Arscott, William A.  
Auger, Glenn  
Baney, John G.  
Barber, Joseph A., Jr.  
Barber, Robert T.  
Barkley, Mildred  
Beulen, Vernon A.  
Boggess, Kenneth E.  
Bradley, James P.  
Brady, Charles J.  
Braucher, Thomas W.  
Brockway, Edward D.  
Brown, Bryan L.  
Burm, Charles J.  
Campbell, Fred J.  
Carnegie, Lee J.

DESERT PROVING  
GROUND (Cont.)

Chapman, Lyle H.  
Clayton, Ray L.  
Cliff, Robert M.  
Connolly, John R.  
Cramer, Dorwin M.  
Crumby, Johnnie  
Cullen, Ellis D.  
Daniels, Llewellyn R.  
Davis, Donald E.  
DeHaven, David A.  
Deines, George L.  
DeLisle, Dirwin F.  
Dooley, Sherman L.  
Emery, Roy M.  
Engle, Ronald F.  
Everett, C. C.  
Farmer, Jack W.  
Faulkner, John C.  
Ferry, Thomas B.  
Fiedler, James T., Jr.  
Flatt, Gene L.  
Frick, Alvin E.  
Fryer, Stephen J.  
Fulsome, Wilbur A.  
Garrison, Oris W.  
Garside, Robert J.  
Garside, Samuel W.  
Gerle, John L.  
Gilmore, Alfred L.  
Goings, Harold T.  
Goodchild, Guy F.  
Grafe, Leslie  
Guthrie, Richard W.  
Hancock, Douglas L.  
Hancock, Melvin K.  
Hankins, Kenneth L.  
Harwood, Elmer E.  
Hays, Dale E.  
Hoel, William D.

Hopkins, Lawrence E.  
Hughes, Roberta O.  
Igielski, Doris B.  
Jackson, James M.  
James, Howard B., Jr.  
Jepson, Leo D.  
Johns, Calvin  
Johnson, Dale R.  
Johnson, Duke S.  
Johnson, Wilbur B.  
Jones, Dallas R.  
Jones, Ronald V.  
Keeling, David L.  
Kelly, Charles M.  
Kincaid, Helen B.  
Kramer, William W., Jr.  
Lane, Jean M.  
Liles, Jerry L.  
Linenfelser, Francis J.  
Little, Gilbert E.  
Lloyd, James G.  
Marcum, William H., Jr.  
Marshall, Stanley O.  
Martens, Stuart W.  
McCormick, Paul D.  
McCourt, Tilden F.  
Miller, Dale A.  
Moon, Robert H.  
Mottinger, Paul G.  
Mullins, Eugene W.  
Myers, Loyd O.  
Niner, Glenn W.  
Nichols, Floyd R.  
Norton, Howard A.  
Norton, William M.  
Pavlovich, Paul  
Payne, Walter W.  
Peters, Duane L.  
Pivonka, Jacob D.  
Richardson, Billy J.  
Salzman, Ethel B.  
Schempp, Lois

Schmeltzer, Herbert J.  
Seay, Aubrey L.  
Seay, William L.  
Shank, Clarence A.  
Sheppard, William W.  
Shura, Gregory I.  
Shumann, Jack W.  
Singer, Robert E.  
Smith, Lowell A.  
Smith, Ned L.  
Smith, O. Glen  
Smith, Ruby R.  
Speelman, Clarence W.  
Springer, Duane H.  
Stanford, Carson B.  
Steinke, Herman O.  
Stewart, Ray J.  
Stewart, Robert R., Jr.  
Stonex, George A.  
Stout, Harold T.  
Stout, James B.  
Turner, Thomas C.  
Vaughan, Jesse L.  
Willicana, Rudolph  
Watkins, L. Homer  
Weissert, David H.  
Whaling, Harry I.  
White, Michael B.  
Will, Arlyn  
Willoughby, Norman A.  
Wisdom, Faye C.  
Wolpert, Elinore M.  
Woodward, Darrel L.  
Younker, Paul N.  
Zeigler, John R.

## PIKES PEAK

Fredricks, Fred  
Geyer, Arthur S.

## PROVING GROUND DIVISION PERSONNEL

ALLISON DIVISION	Maynard, G. L.	Crabtree, Allen O.	CHEVROLET MOTOR DIVISION (Cont.)	Dingler, Richard W.	Humbert, W. Lee
Tarrant, S. C.	McCranner, Donald	Crook, Willard E.		Dixon, Harold E.	Hyne, Duane E.
	McManama, A. E.	Doane, Roy W.		Doherty, Joe M.	Jenkinson, Guy W.
BUICK MOTOR DIVISION	Meisling, Harold O.	Downes, Keith D.		Donoghue, Wallace C.	Jenson, Alfred J.
Arrand, Basil D.	Melzer, Forest L.	Galetto, James P.	Bidwell, Francis J.	Doran, George W.	Jones, John, Jr.
Auker, A.	Merrifield, John W.	Gardner, William L.	Bidwell, Ralph W., Jr.	Drayton, Lloyd L., Jr.	Kane, William J.
Bain, Francis A.	Miller, Ralph	Gatenby, R. A.	Binns, John F.	Drury, William D.	Kansier, Gerald A.
Bartkus, Peter J.	Muschott, C. E.	Greer, Donald S.	Bliss, Carl M.	Duffield, Guy W.	Keck, Cleo, Jr.
Beers, Clarence W.	Oberlin, Richard C.	Hudson, George, Jr.	Bohnett, Gerald M.	Duncan, Dale D	Keck, John L.
Bender, Charles R.	Opasik, Frank J.	Hutchins, Bruce E.	Brockmiller, Fred E.	Duncan, Percy A.	Keider, Allan R.
Bolen, Mickey	Pardee, Leslie D.	Kilpatrick, John E.	Brummett, Patrick T.	Elberling, Kenmore D.	Kelley, Byron
Bordner, James W.	Peel, Lyle E.	Lawson, David R.	Brunsdon, William E.	Farley, N. E.	Kendro, G. A.
Boring, Earl D.	Philpot, Ralph W.	Macfarlane, Gerald S.	Bunting, William C.	Farver, Richard R.	Kethman, Robert C.
Boring, Wendell H.	Philpott, James T.	McAnally, Donald L.	Burr, Charles P.	Fogle, Lawrence R.	Kindlinger, Peter J.
Bryan, Leland	Posante, James H.	Moran, Eugene R.	Butler, Donald O.	Franks, Clarence L.	King, Sidney R.
Bryan, Max V.	Price, Lawrence E.	Moseley, Frank A.	Butzke, Ralph F.	Furister, Ernest E.	Kish, Dennis G.
Buckingham, Covert	Render, Frank	Neistroy, Anton	Cameron, Lawrence E.	Gamble, Robert A.	Klein, Lloyd E.
Burk, Loren J.	Rohrabacher, Albert H.	Peckens, Earl C.	Campbell, Frederick A.	Garrett, J. Dean	Knight, Ann M.
Caswell, Robert A.	Rose, Robert G.	Phillips, Emerson J., Jr.	Caplin, Eric C.	Geiger, John A.	Konopacke, William R.
Caswell, Wayne L.	Rulason, Leonard	Pulver, Robert D.	Carlock, Donald R.	Geiger, Roger L.	Kramer, Charles W.
Charchan, Harry W.	Schooley, Walter L.	Reed, David E.	Carlock, John J.	Goodall, Jack R.	Kubani, Joseph N.
Classens, Gary R.	Shoebottom, Paul W.	Richards, Larry L.	Carrothers, Herbert M.	Goodman, Alan W.	Kuchnicki, Thomas A.
Clayton, Billy Charles	Smith, Charles H.	Stiff, Keith M.	Carter, Creighton F.	Greely, Brian D.	Kurland, Charles
Coffey, Glenn R.	Smith, Henry A.	Taylor, Richard M.	Cartier, Gordon A.	Greely, Gerald R.	Labuschewsky, Donald C.
Collins, Joseph	Stetler, David G.	Tullius, Robert	Caswell, Clare L.	Greene, Robert S.	LaFever, Richard A.
Eckelson, Jack E.	Stevens, Alan Fred	Waters, Richard E.	Caswell, Fred W.	Grover, George D.	Landis, James R.
Garant, William E.	Stoltz, Robert	Wetzel, Harry, F.	Catrell, Norman A.	Hamilton, Stoddard C.	Lanehart, William S.
Glover, Henry	Strickhouser, Richard K.		Cavenee, Forrest	Hancock, Alan	Lanning, Gerald R.
Green, William H.	Suttles, Robert E.		Cavenee, George A.	Hancock, Harold R., Jr.	LeBow, Jesse, Jr.
Hawley, Burton J.	Swanson, Douglas C.	CHEVROLET MOTOR DIVISION	Cavenee, Harold E.	Hanson, Kenneth G.	Lee, LaVerne B.
Heinig, Willard C.	Teeple, John E.	Aldrich, Robert D.	Chaplin, William G.	Hardy, Lloyd J.	Leist, Kenneth E.
Hohenberger, Paul G.	Thompson, Gerald I.	Allen, Charles G.	Chappel, Kenneth F.	Harris, John P.	Lesperance, Sylvester
Housner, Roland W.	Tomlinson, James L.	Ancel, Darwin O.	Charlick, William H.	Harter, Dale H.	Levitte, Russell R.
Housner, Russell M.	Vanzant, Kenneth	Anderson, Paul A.	Chenault, Lawrence H.	Harter, Richard D.	Lindsey, Fredrick V.
Hulbert, Ronald A.	Warner, J. F.	Augustine, Thomas J.	Childs, Gary C.	Hartmen, Lyle C.	Llewellyn, David R.
Janas, Leonard N.	Watters, Bruce Edward	Awrey, Paul R.	Cirisan, John A., Jr.	Hass, Vernon	Loehr, Stephen C.
Johnson, Donald R.	Westerfield, Charles W.	Bair, Charles E.	Clift, Robert H.	Hause, Gerald	Lumley, Harold W.
Johnson, Ernest A.	Willemot, Ray D.	Bair, Erland B.	Cline, Samuel A.	Heeg, Stanley G.	Lyons, Leonard E.
Killoren, Raymond J.	Zentner, William J.	Baker, William G.	Coe, Kenneth C.	Heginbottom, Walter H.	Maloney, Vincent L.
Kinstle, L. J.	CADILLAC MOTOR CAR DIVISION	Basil, Joan	Cole, Horace D.	Hewitt, Lawrence D.	Mays, Edward M.
Kirshman, Clare, Jr.		Beers, Robert G.	Colegrove, Virgil R.	Hogan, Daniel M.	McAtee, Milton J.
Kitto, James	Bills, Leslie D.	Belmonte, Arthur P.	Coll, Charles L.	Hogan, Eugene	McCollum, Wesley L.
Kurtz, Patricia	Bourquin, James L.	Bergin, Aelred J.	Cox, William R.	Hollingdale, Herbert E., Sr.	McCrystal, Robert C.
Langford, Leo L.	Browning, Wilfred R.	Beurman, Lloyd B.	Crider, Robert O.	Hoover, Robert H.	McFarlane, Bernard H.
Lavoy, Kenneth R.		Bidwell, Carl L.	Crook, Robert R.	Horton, William J.	McFarlane, Lawrence A.
			Cuttitta, Louis L.	Hoskins, Martin H.	McGinley, Virginia May
			Darling, Robert L.	Hughes, Charles N.	McLay, John D.
			Denomme, Walter G.	Hughes, Harold H.	Middleton, W. M.
			Dickinson, Claude R.		

CHEVROLET MOTOR  
DIVISION (Cont.)

Miller, David B.  
Miller, Lynn  
Miller, William B.  
Miller, William G.  
Morgan, Russell G.  
Mummert, Arnold D.  
Murray, Stewart A.  
Nauss, Loren R.  
Nelson, Thomas E.  
Newman, Arlington D.  
Nilsen, Dagfinn A.  
Northquist, Dorothy H.  
O'Dell, Leon V.  
Oldenburg, Carol Ann  
Oldenburg, Richard L.  
Olds, Marvin E.  
Oliver, John D.  
Padley, Charles E.  
Paley, Jeffrey B.  
Patnode, Audrey R.  
Patterson, Roy L.  
Peasley, Walter W.  
Potts, Charles E., Sr.  
Powell, Gerald E.  
Powell, Herbert D.  
Prokos, James D.  
Ptak, Nicholas A.  
Quinlan, Gerald M.  
Reading, James O.  
Redinger, Gilbert J.  
Reuss, Lloyd E.  
Reynolds, Clifford E.  
Richards, Robert B.  
Richardson, Byron J.  
Richardson, Harold R.  
Richardson, Kenneth M.  
Richman, David S.  
Richmond, Robert J.  
Rider, Richard A.  
Ries, Gary L.  
Robbins, W. O.  
Rodal, Jack E.  
Rodgers, Larry W.  
Rosenberger, Gary G.  
Russett, William A.

Sauer, Alfred B.  
Schroeder, Malcolm W.  
Seger, William A.  
Shear, Charles D.  
Shear, Kenneth J.  
Sheean, Michael D.  
Shefpo, LaVerne W.  
Sherman, John P., Jr.  
Sherwood, Stewart S.  
Skarritt, Richard G.  
Slocum, Lester E.  
Sloughter, Melbourne L.  
Smith, Carl D.  
Smith, Manferd  
Smith, Phillip H.  
Sneath, Charles J.  
Spare, Richard E.  
Stamats, Jacqueline L.  
St. Clair, Kenneth M.  
Stepp, Earle H.  
Strauss, Lawrence A.  
Sutfin, Leon C.  
Swanson, Ronald J.  
Taylor, Jeffrey M.  
Taylor, Robert C.  
Teggerdine, Donald L.  
Templeton, Arthur R.  
Thomas, Jack G.  
Thompson, Eugene W.  
Thompson, Maurice  
Tibbits, Eldon W.  
Todd, Roy L.  
Truhn, Nicholas F.  
Truxell, Clyde W., III  
Verville, Paul N.  
Voorheis, Kathleen A.  
Voorhis, Joseph M.  
Warner, Leroy J.  
Weidel, Marilyn R.  
Wenzel, David A.  
Wenzel, James Thomas  
White, Garald J.  
Whitley, James W.  
Wilson, Burton A.  
Wimmer, Harry G., Jr.  
Winegar, Claude H.  
Winterhalter, Norman  
Winterhalter, Philip R.

Wissusik, Herbert C., Jr.  
Wolverton, Harold D.  
Woodfill, Richard E.  
Wyckoff, Earl F.  
Young, Lawrence N.

EUCLID DIVISION

Dodd, John F.  
Kelly, Thomas F.  
Sipes, Ralph L.

FISHER BODY DIVISION

Bassette, Arthur S.  
Bordner, Charles E.  
Brown, John F.  
Colegrove, Donald C.  
DeJohn, James H.  
Durand, Gerald F.  
Eifert, Howard H.  
Falk, Heinz  
Ferrante, Michael B.  
Goit, Robert C.  
Hendricks, Curtis J.  
Hewlett, Donald W.  
Jabs, Raymond B.  
Miller, Elwood L.  
Motschenbacher, Jeffery L.  
Orvis, Donald E.  
Raymond, Norman L.  
Sloughter, Gerald L.  
Turner, Lloyd Jr.  
Turner, Thomas E.  
Zachow, Donald J.

GMC TRUCK AND COACH  
DIVISION

Amo, Richard A.  
Bernauer, Lawrence G.  
Betzing, Richard M.  
Booth, James R.  
Bouchard, Norman  
Brenay, James B.

GMC TRUCK AND COACH  
DIVISION (Cont.)

Broden, Ronald R.  
Busk, Arlo K.  
Chelf, John  
Cook, Warren G.  
Coryell, Willis  
Edmonds, Donald  
Erickson, Elton C.  
Gaedt, E. L.  
Gallop, Leslie H.  
Gallup, Robert M.  
Gregory, David S.  
Haughton, Herbert D.  
Houtz, Virgil R.  
Howie, Jack H.  
Kellogg, Harold S.  
Klekot, Walter  
Lee, Norman E.  
MacDermaid, Edward A.  
McKenzie, Charles E.  
Merkle, Ralph H.  
Morgan, Robert  
Morton, Russell B.  
Newman, Virgil O.  
Pasco, Charles H.  
Pizzala, Clarence J., Jr.  
Reid, Frank N.  
Roselle, Fred R.  
Ryckman, T. E.  
Schjolin, Lloyd A.  
Smith, H.  
Somerville, Okey, Jr.  
Thomas, Clyde A.  
VanGordon, Fred N.  
Wendell, Lawrence L.  
Williams, David L.  
York, Lester

GM ENGINEERING STAFF

Hogue, H. H.  
Kelley, W. R.  
Maki, T. E.  
Masak, R. W.  
Sober, S.  
Watrous, R. C.

GM RESEARCH  
LABORATORIES

Cook, Joseph  
Everett, Robert L.  
Gahrs, John R.  
Garvey, Robert G.  
Gerhard, C. J.  
Mitsopoulos, C. G.  
Wiese, Warren M.

HYDRAMATIC DIVISION

Bangham, Robert D.  
Bingham, Richard A.  
Caswell, Earl L.  
Cusic, Harry, Jr.  
Dortch, Donald W.  
Filkins, James  
Jarzynka, Richard J.  
Johnson, Eugene D.  
Keckonen, Lawrence A.  
Rossman, Donald W.  
Smith, Stephen E.  
Sprague, Daniel E.  
White, Jack E.

OLDSMOBILE DIVISION

Ackels, Harold L.  
Adam, Harold E.  
Barker, Dale M.  
Blankenship, Thomas B.  
Boutell, James K.  
Brininstool, Claude, Jr.  
Brown, Walter F.  
Cavanaugh, George W.  
Chandler, Wallace L.  
Crocker, Philip E.  
Curtis, Duane W.  
Davis, Roy E.  
Dennis, Gaylord A.  
Eckhart, Jack  
Edwards, Gayle, E.  
Everett, Harmon C.  
Fabus, Louis J.

Fernholz, Herbert C.  
Fetterman, Daniel P.  
Fifer, Jack R.  
Fiscus, Charles A.  
Fluke, William A.  
Foster, Milton H.  
Frank, Theodore R.  
Fuller, Wendell G.  
Gee, Robert  
Grewett, William A.  
Grieb, James L.  
Haas, Richard E.  
Hake, Harold C.  
Hasty, Delford L.  
Hatt, David W.  
Hummel, Martin H.  
Johnson, Jerry W.  
Jones, J. B.  
Kingsley, L. W., Jr.  
Leece, James L.  
Marchak, Martin, Jr.  
Martin, Arthur L.  
Martin, Dale E.  
Martzke, Cecil  
McGoron, Harold L.  
Miller, Douglas E.  
Miller, Frederick  
Miller, Lawrence N.  
Moore, Howard L.  
Moore, Thomas M.  
Morbitzer, Edward A.  
Nelson, Orville A.  
Ortiz, Fernando  
Pentecost, William T.  
Polan, Sidney L.  
Pollok, Orla B.  
Powell, James R.  
Prince, Tom  
Remer, Lawrence H.  
Robbins, Jack W., Sr.  
Schelling, Edward C.  
Schueller, Theodore  
Schultz, Anthony P.  
Seafuse, John  
Seaton, Royal V.  
Seward, Laurell K.  
Shank, Norman K.  
Shier, Donald A.

OLDSMOBILE DIVISION  
(Cont.)

Simon, John J.  
Sisson, Cy  
Slocum, Roland R.  
Smith, Donald A.  
Smith, Dulaney D.  
Stromberg, Carl  
Swift, Donald  
Tebbutt, Marshall W.  
Uber, Paul E.  
Utter, Clarence  
Whitsell, Duane R.  
Williams, Ellis  
Withers, Raymond W.  
Wolfe, John

PONTIAC MOTOR DIVISION

Ashby, Maynard L.  
Bailey, Daniel J.  
Ballek, Richard N.  
Barkell, Clifford L.  
Barker, Albert  
Bartnick, Kenneth L.  
Bible, Jack K.  
Bretz, Robert F.  
Brooks, Robert J.  
Buck, Marietta J.  
Campbell, James D.  
Cattin, Walter J.  
Connon, Claud O.  
Cooper, Alfred G.  
Copenhaver, Marvin C.  
Couture, Alfred E.  
Cox, Thomas E.  
Culham, Melville M.  
Dixon, Kermit  
Dunn, Velton  
Ewers, Keith J.

Field, Samuel L.  
Fosdick, James C.  
Frieburger, Albert  
Gelow, Willis E.  
Gore, James O.  
Green, George W.  
Harp, Lawrence H.  
Harrison, Alvia J.  
Hasting, Luther C.  
Helm, Edwin F.  
Heurtebise, John V.  
James, Raymond T. B.  
Jenkins, Robert W.  
Ketchum, Herbert J.  
Kitchen, Grant H.  
Kline, Harry J.  
Krueger, Harold M.  
LaTurneau, Duane C.  
Lazenby, James W.  
Lewis, George J.  
Lewis, Joseph R.  
Lewis, Lloyd G.  
Lloyd, Alfred B.  
Ludeman, Cecil  
Lytton, Courtland  
Maki, Ernest  
Makrias, John  
Mancour, Ward D.  
Maurer, Robert L.  
Moses, Alvin T.  
Newcombe, John W.  
Ouellette, Jerry J.  
Pare, Robert D.  
Parker, Jack L.  
Penland, Billy G.  
Perry, William H.  
Porter, Donald T.  
Roach, Russell H.  
Roberts, James  
Robinson, George D.  
Roddewig, James G.  
Senk, David J.

Shaw, Robert G.  
Simmons, Jesse W.  
Skarritt, Forrest W.  
Stamp, William  
Starr, John W.  
Talley, Norvel D.  
Tidwell, Eugene H.  
Tolbert, Leon D.  
Turner, Eugene  
Vallance, Willard  
Voelpel, John  
Ward, Arthur L.  
Wern, Jerry G.  
Whaley, Elmer V.  
White, Robert L.  
Wilfong, James P.  
Wing, Walter H., Jr.  
Woudstra, Richard T.  
Wyzgoski, Michael

ROCHESTER PRODUCTS  
DIVISION

Ahoe, J. V.  
Borrisove, Lenny J.  
Brokaw, Donald D.  
Cochrane, John  
DiMartino, Nancy P.  
Haefner, Raymond J.  
Hornback, Albert L.  
Lunn, C. R.  
Paradise, Robert A.  
Reed, Robert J.  
Roe, Norman E.  
Rohr, Milton C.  
Shorts, William G.  
Walters, Thomas L.  
Williams, Warren F.

TERNSTEDT DIVISION

Shanklin, William J.