General Motors Proudly Announces

The Production Of Its . . .

One Hundred Millionth Vehicle

IN THE UNITED STATES

In the Janesville, Wisconsin
Chevrolet Assembly Plant

At 11:30 a.m.
Friday, April 21, 1967

We appreciate your interest in the production of General Motors' 100 millionth vehicle in the United States.

The enclosed stories and photographs were put together primarily for use in connection with that event.

However, we hope you also will find many of them suitable for future reference or use. They tell much of the General Motors story.

GENERAL MOTORS CORPORATION
General Motors Building, Detroit, Michigan 48202
Trinity 3-7200 Area Code 313
IMMEDIATELY

NEWS

For Release

FORMED ON SEPTEMBER 16, 1908, GM
HAS BECOME REAL PART OF WORLD SCENE

General Motors, as we know it today, had its beginnings September 16, 1908. Since then it has grown, prospered and become a very real part of the American and world scene.

GM today has 128 plants operating in 18 states and 70 cities in the United States, seven plants in Canada and assembly, manufacturing or warehousing operations in 22 other countries.

Subject to broad over-all policies and coordinated control of the central organization, the 39 operating divisions and subsidiaries serving the United States and Canada manage their own affairs and thus in many respects are like independent businesses.

In the United States there are nine car, truck and body divisions, 15 automotive components divisions, two defense divisions, four engine divisions, one division which manufactures commercial and household appliances, three finance and insurance units, and General Motors Overseas Operations with headquarters in New York. In addition, there are four operating divisions in Canada.

Incorporation papers of the General Motors Company, organized by William C. Durant, were filed September 16, 1908, in New Jersey. Early or charter members of the infant GM cluster were Buick, Oldsmobile, Cadillac, Oakland, Cartercar and Elmore, together with Reliance and Rapid trucks. (The Oakland Motor Car Division introduced Pontiacs in 1926, discontinued production of Oaklands in 1931 and became the Pontiac Motor Division in 1932. Chevrolet joined the group in 1918.)

By 1909 and the end of the first fiscal year, GM had posted net sales of

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$29,030,000, and its payroll at the peak of the manufacturing season numbered more than 14,000. By 1910, net sales had risen to $49,430,000 and the employment level was around 10,000.

In a sense, the 1908 formation of GM was a defensive maneuver. Motorcar firms were appearing virtually everywhere, but throughout the industry obituary notices were as common as birth announcements.

In this low survival period, GM's founders believed that the various GM units had a better chance to survive as a group than standing alone.

Likewise, GM's early organizers visualized the need for dependable suppliers -- reliable specialized partsmakers to sustain the main assembly lines. They had scrambled in an open market to pick up what parts they could, regardless of their fitness or design for automotive use.

The Jackson-Church-Wilcox Company became an affiliate in 1910. This unit now operates as the Saginaw Steering Gear Division. At the same time the Champion Ignition Company joined GM and later became AC Spark Plug Division.

By 1911, the idea of a general staff organization had gained more than a toehold.

A director of production was appointed. The company began to "create a general staff of mechanical engineers, gasolene (correct) engine engineers, designers, production experts and other experts not attached to any particular factory, but whose advice and services would always be available (to) . . . the necessarily more limited staff of each individual factory."

In connection with this a testing laboratory was established. "This laboratory," the annual report said, "serves as an additional protection against costly factory mistakes and gives the purchaser of every one of our machines an additional guarantee not merely for his comfort, but to assure his safety."

This notion of consulting, advising, fact finding and testing probably was the genesis of GM's present comprehensive staff organization. Today it covers such fields as marketing, research, engineering, employe relations, personnel, styling, procurement and schedules, manufacturing development, public relations, business research and others.

A corollary engineering event at Dayton, Ohio, having much to do with GM's subsequent leadership in research, was the late Charles F. Kettering's successful electric self-starter. It appeared on the 1912 Cadillacs.

By doing away with the dangerous, unpredictable hand crank for starting auto engines, this device definitely popularized motoring. More than any other single development, it was credited with making motor cars usable by women drivers.

Moreover, the starter and an earlier ignition system Mr. Kettering had devised led to the founding of Dayton Engineering Laboratories Company. This name was compressed into Delco, a trademark soon famous throughout the automotive world.

In 1918 United Motors became part of GM. This was a miniature GM of the parts and accessories business, closely related to automobiles. It included Dayton Engineering Laboratories, (Delco), Remy Electric, Klaxon, Harrison Radiator, Jaxon Steel Products, Hyatt Roller Bearing, New Departure and United Motors Service.

Several of these still are identified by name as GM divisions, while others were combined with other operations in GM, either already in existence or organized in later years. United Motors today is a service organization handling field distribution of automotive parts and accessories manufactured by GM.

From Dayton Engineering Laboratories GM acquired not only the various Delco facilities, but also an engineering group that in 1920 formed a staff nucleus of GM Research Corporation -- later GM Research Laboratories Division which Mr. Kettering headed until 1947.

These newcomer divisions in themselves had interesting histories and from their ranks came men famous in GM's top management. The late Charles E. Wilson, GM president from Jan. 6, 1941 to Jan. 26, 1953, when he was appointed Secretary of Defense by President Dwight D. Eisenhower, moved to central office from Remy Electric, later known as Delco-Remy Division.

Another chief executive officer, the late Harlow H. Curtice, who was president from 1953-1958, started as a bookkeeper with AC Spark Plug Division. The late Alfred P. Sloan, Jr., president from 1923-1937 and chairman from 1937-1956, began his GM career as a draftsman-designer for Hyatt Bearings.

Hyatt was incorporated in 1892 and the first Oldsmobiles were equipped with Hyatt roller bearings. Later Hyatt became a leading supplier for virtually the entire industry. Today the merged New Departure-Hyatt Bearings Division manufactures bearings for automotive, aircraft, farm, industrial, mining, off-the-road, oil field, steel mill, textile, special and other applications.

New Departure Manufacturing Company, organized in 1888 to manufacture doorbells, branched into the bicycle business as a maker of coaster brakes and bells. Later it began producing ball bearings both for civilian and military use.

Harrison Radiator, established at Lockport, N. Y., in 1910, played a leading part in developing automotive cooling systems. Its operations have since expanded to include defrosters, heaters and thermostats, air conditioning systems for cars and heat exchangers for aviation, marine, automotive and industrial uses.

Remy Electric Company, of Anderson, Ind., now Delco-Remy Division, produced magnetos and later built up a generator business. Today its products include a wide range of automotive electrical and ignition equipment.

Fisher Body Corporation, which in 1910 received the first volume order for closed car bodies from Cadillac, became closely allied in 1919 with GM through GM's

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purchase of majority interest in the firm. In 1926 the balance of the outstanding stock was acquired and Fisher Body became a full-fledged division.

In 1925 Fisher acquired Fleetwood Body Corporation, which at that time specialized in custom body building. Today Fisher's Fleetwood plant in Detroit turns out bodies for Cadillac.

Closely connected with Fisher was Ternstedt Manufacturing Company, of Detroit, which had developed the first dependable closed car window regulator. By 1920 Ternstedt was a Fisher subsidiary and became GM's automotive hardware producer when Fisher joined GM. In 1948 Ternstedt gained full divisional status.

A major move to diversify came in 1919 with GM's acquisition of Guardian Frigerator Company, a firm organized for a venture in electric refrigeration. Guardian's name was changed to Frigidaire and operations were moved to Dayton where most of GM's electrical facilities were established.

Frigidaire pioneered in the use of Freon, a low-pressure, safe refrigerant that proved a great advance in home electric refrigeration. It was made available to the refrigeration industry and today is used in virtually all types of refrigeration and air conditioning systems.

From electric refrigerators the Frigidaire name has spread to many other appliances -- ranges, food freezers, automatic clothes washers and dryers, room air conditioners, automatic dishwashers, food waste disposers and air conditioning equipment for automobiles.

Also during the year of Frigidaire's appearance, GM added Saginaw Malleable Iron Division. It produced malleable iron castings for various other divisions and developed ArmaSteel. This permitted manufacture of castings of strength and reliability that compared with forgings.

Saginaw Malleable now is part of GM's Central Foundry Division, with operations

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at Saginaw, Mich., Danville, Ill., Defiance, Ohio, and Bedford, Ind.

Moraine Products Division at Dayton was established in 1923 -- a typical example of a GM unit founded by research.

GM Research Laboratories in studies of powdered metals had developed the so-called Durex bearings. Actually, they were designed into an air-cooled automotive engine that never reached the production line. Main feature of these bearings was that they could be impregnated with oil and remain self lubricating. Commercial need for such a product was obvious and Moraine Products Division (now Delco Moraine Division) was organized. Its headquarters site was the former home of Dayton Metal Products Company, a research and engineering firm Mr. Kettering had set up for special projects after Delco was launched.

Delco Moraine specializes in bearings, mainly for automotive and Diesel engines, together with brake equipment and fluids, automatic transmission parts and automotive power brake units.

Two other divisions were announced in 1923, Inland Manufacturing at Dayton and Brown-Lipe-Chapin at Syracuse, N. Y. Inland's specialty was steering wheels with wood veneer rims. These were supplanted by steering wheels of rubber and plastic compounds, and today the Inland Manufacturing Division has a wide range of products compounded of rubber and plastics and invisilift air casters.

Brown-Lipe-Chapin (now part of Ternstedt Division), a GM supplier dating back to 1910, was established in 1895 to make a two-speed bicycle gear. Later it produced bevel and spur gears. Currently, Ternstedt produces automotive body hardware, parts and accessories.

In the truck and coach field, the old Reliance and Rapid truck companies, original GM units, were consolidated in 1911 to form General Motors Truck Company at Pontiac, Mich.

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In 1925 General Motors Truck Division was merged with Yellow Cab Manufacturing Company to form Yellow Truck and Coach Manufacturing Company as a subsidiary with GM owning a majority of the stock. The result was a widening of GM's commercial vehicle business. In 1943 an exchange of stock for the minority interest brought Yellow Truck and Coach into General Motors as the present GMC Truck & Coach Division.

Another striking reward of long and arduous engineering experiments was a series of Diesel developments. The work began in 1928 at GM Research Laboratories with a single-cylinder engine in a test cell. Although Rudolf Diesel invented the engine that bore his name in 1897, its use had been limited by its bulkiness and its high weight per horsepower.

GM researchers finally developed a fuel injector and stepped up the engine's efficiency by converting it from a four-cycle into a two-cycle power plant. In effect, this cut the Diesel down to usable, portable size and stepped up its power output.

At the time of this research development, the country was sinking into a depression. Funds for backing an all-out Diesel program were thin, but a decision was made to go ahead.

The Electro-Motive Company of Cleveland became a GM subsidiary in 1930. It was later organized into Electro-Motive Division for production of railway locomotives at LaGrange, Ill. It spearheaded the revolution that dieselized the nation's railroads, making the steam locomotive obsolete.

Another major division growing out of this original 1928 research project was Detroit Diesel Engine Division, founded in 1937 to make power plants for industrial, marine and oil field installations. Its business now embraces Diesel engines for marine, petroleum, transportation, military and construction equipment use.

In addition, a third unit was organized, Diesel Equipment Division at Grand Rapids, Mich., in 1944 to manufacture fuel injectors, hydraulic valve lifters, gas valves, piston rings and exhaust valves.

Virtually this entire Diesel program evolved from within GM -- a new industry created by engineering research.

A large segment of GM's parts and accessories trade underwent revamping in late 1928 -- a triple play dividing Delco-Remy Corporation into three groups.

That portion of the corporation, formerly known as the Remy Electric Company of Anderson, Ind., became Delco-Remy Division. Its automotive starting, lighting and ignition unit production including that formerly manufactured at Delco, was then concentrated at Anderson.

The Dayton installation of the original Delco-Remy Corporation became Delco Products Division. Its product line includes electric motors and generators, shock absorbers, hydraulic and electric controls, actuators, windshield wipers and automotive suspension units.

The third unit created by the move was consolidation of Guide Lamp Company of Cleveland with the lamp business formerly handled by Delco-Remy. Today Guide Lamp Division at Anderson makes automotive lamps, lighting controls, mirrors, finished die castings, molded plastic parts and stampings.

One of GM's largest ventures in the aviation field was the 1929 addition of Allison Division at Indianapolis. A one-time engine design and servicing shop for Indianapolis Speedway cars, Allison had a staff experienced in marine, aircraft and Diesel engine development ever since World War I days.

After GM took over, Allison concentrated on a 1000-horsepower liquid cooled aircraft engine. By 1937 it had produced the first 1000-horsepower engine ever to pass Army Air Force acceptance tests.

In pre-Pearl Harbor days of World War II this division took on not only United States defense contracts but also began filling war orders from Britain, France and

China. Since then Allison has devoted major production to turbo-jet and turbo-prop engines for the military. It also has branched into the automatic transmission business for heavy duty vehicles, including tanks. Civilian production includes powershaft and fully automatic transmissions for trucks and other heavy-duty vehicles and gas turbine engines and propellers.

The same year of Allison's debut as a GM enterprise, the North East Electric Company of Rochester, N. Y., became part of GM. It was consolidated with GM's former Delco-Light Company in 1930 and renamed Delco Appliance Division. Early in 1965 it was consolidated with the Delco Products Division.

Another electrical business became a GM division in 1932 at Warren, Ohio. Packard Electric Company had been a veteran producer of auto lamps and transformers. In its shops also was born the Packard automobile. But Detroit capital attracted the automotive venture to Detroit in 1903, and it separated from the parent company.

By 1943 Packard Electric was combined with GM's Sunlight Electrical Division, which since 1933 had been making household appliance electric motors. Today Packard Electric Division produces automotive appliance, marine and farm equipment wiring systems and components, fiber optics and magnetic wire.

Another Delco name was added to the GM roster in 1936 -- Delco Radio Division. Plant facilities were purchased at Kokomo, Ind., to turn out automotive radios. Other products today include tape players, heater and air conditioner controls, semiconductor devices, digital systems and military electronics.

A year later Rochester Products Division was founded at Rochester, N. Y. Originally planned as a second plant for Delco Appliance, the new facility was opened in 1938 and a year later was given divisional status. It makes carburetors and cigaret lighters, steel tubing, locks and keys, and transmission shift controls.

With development of the first fully automatic transmission for automobiles in the waning years of the 1930s, General Motors scored an engineering "first" in the transportation industry. And like other developments, this innovation founded another division -- Detroit Transmission Division (now Hydra-Matic Divison), turning out Hydra-Matic units.

Civilian Hydra-Matics were scarcely under way, however, when Detroit Transmission revamped its schedules for tank transmissions. Following the war, Hydra-Matics were produced not only for three GM divisions -- Pontiac, Oldsmobile and Cadillac -- but for competitive lines of automobiles as well. In more recent years Hydra-Matics have become economically popular in the truck industry, civilian and military.

Prior to World War II, GM began assembly of Buick, Oldsmobile and Pontiac cars in plants at South Gate near Los Angeles and at Linden, N. J. Parts were made in the parent factories.

With the end of the war in 1945, the Buick-Oldsmobile-Pontiac Assembly Division (renamed GM Assembly Division on July 1, 1965) was formed with Detroit headquarters. The postwar expansion plans included leasing a war plant at Kansas City, Kan., and new plants at Arlington, Tex., Atlanta, Ga., Wilmington, Del., and Fremont, Calif. Under this system, customers in territories far from main division plants are supplied quickly and efficiently with Buick, Oldsmobile, Pontiac, and Chevrolet cars and Chevrolet and GMC trucks.

Postwar expansion also involved the Diesel Equipment Division, which had been given divisional status January 1, 1944. A new plant was built in Grand Rapids, Mich., for the production of Diesel fuel injectors. The division in addition now manufactures hydraulic and mechanical valve lifters, turbine nozzles and cold formed precision parts.

In 1953 GM acquired the Euclid Road Machinery Company of Cleveland, a leading firm in manufacturing heavy off-the-road equipment for moving earth, rock coal and ore.

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At the outset of 1954, Euclid became a GM division, marking a new turn in GM industry toward another engineering territory.

The year 1954 also brought General Motors to one of its most important milestones. On November 23 at Flint, Mich., the corporation built its 50 millionth vehicle in the United States -- a Chevrolet passenger car painted gold.

Two years later, on May 16, 1956, GM formally dedicated its new Technical Center in suburban Warren near Detroit. The 330-acre complex (it now has 29 buildings with another under construction) is one of the world's great industrial research centers. Four GM general staff groups -- Research, Engineering, Styling and Manufacturing Development -- have headquarters at the Center. Looking as fresh today as when it was completed, the Center is the scene of major activity. Its important has grown over the years.

Another important anniversary was celebrated in the 1950s. On September 16, 1958, GM marked its 50th year.

It took GM only little more than seven years to go from the 50 millionth to the 75 millionth vehicle produced in the United States. The 75,000,000th vehicle -- a Pontiac Bonneville convertible with a pearl ivory finish -- came off the assembly line March 14, 1962, at Pontiac, Mich.

GM's newest division, the AC Electronics Division with headquarters in Milwaukee, Wis., was designated a separate division in July, 1965. Until then it had been part of the AC Spark Plug Division. AC Electronics currently is building the spacecraft guidance and navigation systems for the Apollo moon-landing program. It also produces inertial guidance systems for space boosters and ballistic missiles and electronic and avionics systems for aircraft, ships and land vehicles.

Since its inception in 1908, GM has been headed by six chairmen and 13 presidents.

Among the early leaders was the late C. W. Nash, who later formed his own company to produce Nash automobiles. Mr. Nash was GM president from November 19, 1912, to June 1, 1916, when he was succeeded by William C. Durant, who had arranged for the filing of the original incorporation papers for the General Motors Company.

Mr. Durant served until 1920 when Pierre S. du Pont was named to the presidency. His leave-taking from active management came in May, 1923, and he was followed by Mr. Sloan, who authored many of the basic policies by which GM operates today.

When Mr. Sloan became Chairman and chief executive officer in May, 1937, the late William S. Knudsen was elected president. Mr. Knudsen had been one of the country's top automotive production men, associated with Chevrolet during its drive for sales leadership in the industry.

In 1940 Mr. Knudsen was named by President Roosevelt to direct the national industrial defense production. His place was taken by Mr. Wilson, who guided GM through the war years and the postwar reconversion to civilian production.

When Mr. Wilson became President Eisenhower's Secretary of Defense, he was succeeded by Harlow H. Curtice, who served as acting president from December 1, 1952, until his election as president on February 2, 1953. Albert Bradley on April 2, 1956, succeeded Mr. Sloan as chairman.

A new chairman and president, Frederic G. Donner and John F. Gordon, respectively, were elected September 1, 1958. Mr. Gordon served until his retirement May 31, 1965. James M. Roche was elected the corporation's 13th president and took office June 1, 1965.

In addition to the 100-million U.S. milestone observed April 21, 1967, General Motors had produced 18,493,496 vehicles in other countries. The total includes 4,404,812 passenger cars and 1,395,129 commercial vehicles produced in Canada and 9,875,348 passenger cars and 2,818,207 commercial vehicles produced in other nations.

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The growth of General Motors in Canada has been similar to that in the United States. The McLaughlin Motor Car Co., Ltd., began manufacturing Buicks in Canada under contract in 1907, and participated in organizing the Chevrolet Motor Company of Canada in 1915. The two firms were merged to form General Motors of Canada, Ltd., in 1918. Another subsidiary, The McKinnon Industries, Ltd., which was organized in 1878 and joined GM in 1929, manufactures major parts and assemblies for GM Canadian cars. Frigidaire Products of Canada, Ltd., was organized in 1941 and General Motors Diesel, Ltd., in 1949.

On December 31, 1925, Vauxhall Motors Limited, a small concern in Luton, England, became a subsidiary of General Motors. With an annual output of some 1,500 cars, Vauxhall thus became the first GM vehicle manufacturing plant overseas.

Today GM manufacturers cars and trucks in seven countries abroad -- besides Canada -- Germany, Australia, Argentina, Brazil, Mexico and South Africa, as well as England -- with a total annual capacity approaching a thousand times the 1925 figure.

The early entry of General Motors into overseas manufacturing grew logically out of changing conditions in world automotive markets. GM had entered these markets in 1911, when the General Motors Export Company was formed, and its U.S.-made products had proved acceptable overseas well into the 1920s. During that decade, however, it became clear that American cars were growing too large to compete well abroad, where lower income levels, shorter driving distances and higher fuel costs encouraged smaller cars.

Three courses of action were open to General Motors if it wished to remain an international enterprise. First, it could continue to export American-type cars, in the face of a declining demand. Second, it could build a car in the United States that would better suit overseas customers -- one which would not, however, be widely accepted in its home country and which would still have to hurdle transportation and tariff barriers. Third, General Motors could -- as it decided to do -- build cars and trucks overseas to meet overseas market requirements. This required the greater investment and the greater risk. It also promised the greater success.

GM's overseas automotive products are made under the famous Opel, Vauxhall, Bedford and Holden trade names, and under the Chevrolet brand as well. Local manufacture allows each vehicle to be engineered for the specific needs of its home country, and in addition for the export markets of that country.

The major overseas manufacturing plants in Germany, England and Australia have their own engineering and styling facilities, and each is responsible for the design of its own products. Like any GM division in the United States, each plant can also obtain engineering and production know-how from the Corporation's home-based service staffs.

Each overseas General Motors manufacturing plant makes contributions to its home country, in terms of payrolls, taxes, facilities, managerial and engineering skills, useful goods and export earnings. For example, Opel in Germany employs over 50,000 people, and Holden's in Australia over 20,000.

Vauxhall and Opel export approximately 40 to 50 per cent of their production. Since its export activities began, Holden's has sent more than 100,000 vehicles to its 63 overseas markets.

Though it was the first overseas manufacturer for General Motors, Vauxhall Motors in England lack capacity to produce more than some 50,000 units annually until after World War II. Since then its facilities have gradually been expanded to an annual capacity of more than 300,000 Vauxhall cars and Bedford trucks. Now 4,214,307 vehicles have been made at Vauxhall by General Motors.

When Adam Opel A.G. became GM's German manufacturing subsidiary in March 1929,

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it was the sales leader in its low-price market and the largest vehicle builder in Germany, with an output of 43,000 cars and trucks in 1928. Opel annual capacity is now more than 650,000 vehicles, and the Opel share of the number of vehicles made outside the U.S. to date by General Motors is 6,496,381 units.

At the invitation of the Australian government, General Motors moved after World War II to develop its existing assembly and body manufacturing facilities in that country into a full automobile manufacturing plant. The first Australian car, the Holden, was produced by General Motors-Holden's in December, 1948. By 1950 production was up to 20,000 cars, and it has now passed the 150,000 unit level. The contribution of Holden's to the total production outside the U.S. is 1,709,521 passenger cars and trucks.

The fourth addition to the ranks of General Motors manufacturers abroad was GM do Brasil, which had been assembling imported vehicles in Brazil since 1925. It gradually added manufacturing capabilities until 1959 when, with a new foundry and engine plant, it began full manufacture of Chevrolet commercial vehicles. To date, it has built 123,614 units. Last November, GM do Brasil announced that it will add facilities to build a line of passenger cars in the near future.

GM's fifth overseas manufacturer, General Motors Argentina, also traces a history of vehicle assembly back to 1925. Since 1963 it has been operating new facilities for the manufacture of Chevrolet passenger cars, similar to the Chevy II, and Chevrolet and Bedford commercial vehicles. Argentina has built 76,032 cars and trucks to date.

During 1965, two more General Motors plants abroad made the transition from assembly to manufacturing. GM de Mexico has since produced 38,477 cars and trucks and GM South African has built 35,223.

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IMPORTANT DATES IN GM'S HISTORY

Many dates stand out as important in GM's history. Following are some which have had considerable impact over the years:

1908 Cadillac won Dewar trophy in London for demonstrating interchangeability of parts, a basic element in mass production.

1910 Cadillac was first manufacturer to offer closed bodies as standard equipment.

1911 First successful electric self-starter developed by C. F. Kettering and installed in a Cadillac.

1914 Cadillac was first in U.S. to produce a V-type water-cooled, eight cylinder engine.

1916 General Motors organized as a corporation under Delaware law (October 13) to acquire all stock of the General Motors Company.

1919 General Motors Acceptance Corporation organized.

GM Institute opened at Flint as part-time training school.

1923 Four-wheel brakes appeared on 1924 Buicks.

Ethyl gasoline, developed in GM Research Laboratories, first sold commercially.

1924 General Motors Proving Ground, Milford, Michigan established.

First GM vehicle assembled abroad, in Denmark.

1925 Vauxhall Motors Ltd., Luton, England, acquired by General Motors.

General Exchange Insurance Corporation (predecessor of Motors Insurance Corporation) organized by General Motors.

1928 Synchromesh transmission introduced by Cadillac.

1929 First room air conditioner manufactured by Frigidaire.

Adam Opel A. G., Germany, acquired by General Motors.

1933 No-Draft Ventilation, developed by Fisher Body, introduced on all GM cars.

Individual front wheel suspension, called Knee-Action, developed by GM Engineering Staff.

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1939 Hydra-Matic, first completely automatic shift transmission, introduced by Detroit Transmission Division (now Hydra-Matic Division) on Oldsmobile's 1940 models.

First turn signals in the automotive industry developed by Guide Lamp Division and introduced by Buick.

1940 GM produced its 25,000,000th U.S.-made vehicle (January 11).

1940-45 GM delivered more than $12,300,000,000 worth of war material, including airplane engines, airplanes and parts, trucks, tanks, marine Diesels, guns, shells and miscellaneous products.

1947 GM Train of Tomorrow, featuring the famous Astra Domes, started two-and-a-half year tour of the U.S. and Canada.

1948 Cadillac and Oldsmobile introduced first high compression V-8 engines.

First mass-produced car to be manufactured in Australia, the Holden, introduced by GM.

1952 Power steering offered by Cadillac, Oldsmobile and Buick.

1953 First of 30 GM training centers opened in Detroit.

Power brakes offered by Buick and Oldsmobile.

Chevrolet Corvette introduced featuring first molded plastic body to be produced in quantity.

1954 GM produced its 50,000,000th U.S.-made vehicle (November 23).

GM introduced the XP-21 Firebird, first gas turbine automobile built and tested in U.S.

Turbocruiser, world's first gas turbine bus, introduced.

GM Desert Proving Ground, Mesa, Arizona, established.

1955 GM Powerama attracted 2,218,412 visitors in its showing on the Chicago lakefront.

1956 Gm Technical Center dedicated on May 16.

1958 GM marked 50th anniversary with year-long Golden Milestone celebration.

1959 Chevrolet introduced the Corvair, powered by air-cooled, lightweight, rear-mounted engine.

1960 Three GM divisions introduced new smaller cars: the Buick Special, Oldsmobile F-85, and the Pontiac Tempest.

1961 Chevrolet introduced a new line of smaller cars, the Chevy II.

1962 GM produced its 75,000,000th U.S.-made vehicle (March 14).

Number of General Motors shareholders passed the 1,000,000 mark.

GM's subsidiary in West Germany, Adam Opel A. G., observed its 100th anniversary and introduced a new car in the one-liter class, the 2-door, 4-passenger Kadett.

1963 A new car, Chevelle, was introduced by Chevrolet in September.

The one-liter British Viva was introduced by Vauxhall in September.

1964 GM's Futurama at the New Yorks World's Fair, attracted 15,681,000 visitors.

1965 Attendance at the second year of the Futurama exhibit exceeded 14,000,000 visitors -- bringing the two-year total to more than 29,000,000 persons and setting an all-time international attendance record for an industrial exhibit.

Oldsmobile introduced the front-wheel drive Toronado.

1966 GM announced new energy-absorbing steering column as standard on all 1967 models.

Chevrolet Camaro introduced at beginning of 1967 model year.

Cadillac Division introduced its front-wheel drive Eldorado.

GM demonstrates two experimental electrically-powered vehicles.

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GM
MARK OF EXCELLENCE

GENERAL MOTORS CORPORATION
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NEWS

For Release IMMEDIATELY

CONTINUING EFFORTS ARE REQUIRED
TO MAKE GM CARS SAFER THAN EVER

General Motors' continuing progress in research and engineering has helped make its 1967 automobiles the safest in the history of the Corporation.

This progress is evident in two of the safety features that are standard in the Corporation's 1967 lines: the GM energy-absorbing steering column and passenger-guard door locks.

In a severe front-end collision, the energy-absorbing steering column compresses at a controlled rate -- up to $8\frac{1}{4}$ inches -- when impact loads are applied at either end. The new steering column is the result of research and development dating back to the late 1950's.

Passenger-guard door locks on all doors help prevent accidental opening should a door handle be tripped inadvertently. This feature is the latest safety development in GM door locks, which over the years have been made stronger and more foolproof to protect occupants in collisions.

Other new or improved 1967 safety features -- there are a total of 29 -- include:

* Folding seat-back latches which lock front seats on two-door models and second seats in station wagons.
* Day-night mirrors with shatter-resistant glass, vinyl clad breakaway base and vinyl edge bezel.
* Window regulator knobs of soft vinyl and with low profiles.
* Padded and energy-absorbing instrument panels.
* Smooth contoured instrument panel knobs.
* Dual master cylinder brakes.

The 29 safety features standard in 1967 GM lines are in addition to safety items of

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prior years. These include front and rear seat belts; back-up lights; outside rearview mirror; dual speed windshield wipers and washer, and improved penetration resistant windshield glass.

While features designed to protect occupants in the event of an accident are important, automotive safety also must be concerned with preventing the accident in the first place.

One way to prevent accidents is to have components do consistently what they are designed to do and to provide this in today's automobiles, General Motors has an extensive testing program at its proving ground facilities at Milford, Mich., and Mesa, Ariz., and at a Pikes Peak, Colo., test site.

At the GM Proving Ground at Milford, for example, more than 4,000 acres and 75 miles of roads provide the most comprehensive installation of its kind in the automotive world. Here major components such as engines, transmissions, brakes, steering and suspension systems are subjected to grueling tests over a variety of roads in all kinds of weather conditions. This testing assists engineers in designing greater reliability into the vehicle. Handling and stability -- two important safety factors -- are evaluated with a battery of sophisticated tools and techniques. For example, a small rocket engine simulates wind gusts to help engineers improve driver control in crosswinds. Other proving ground facilities include a punishing road of smoothly worn granite blocks imbedded in concrete that is ten times tougher on vehicle bodies, frames and suspensions than any secondary road and the "bathtub" and "mudbath," which enable GM engineers to study under actual conditions the splash protection of brakes, seals, air intakes and other parts and components.

Brakes are tested with panic stops at speeds as high as 100 mph, and stopping rates, pedal pressure and pedal travel are measured and plotted automatically with special precision instruments. Steering angle deflections and forces are produced and analyzed in a built-in computer, and recorded automatically with PG developed instrumentation.

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Crash studies also are an important part of GM safety testing. Since 1963, a GM safety research facility called an impact sled has helped engineers simulate collision impacts with vehicle bodies, components, and dummy passengers. The sled, the first such facility in the industry, enables engineers to make repeatable tests under controlled conditions. These tests, in turn, help engineers design safer automobiles.

Some information can be gathered only through study of actual car crashes. General Motors' work in this area began in 1933. Today, collisions into immovable concrete barriers are recorded with painstaking accuracy through the use of high-speed photography and a variety of highly advanced recording devices. In 1966, some 300 crashes were staged at the General Motors Proving Grounds.

In addition to GM's extensive proving ground facilities, each car division and a number of supplier divisions maintain separate engineering test centers. Ternstedt Division, for example, is involved in intensive testing of door hinges, hood latches and seat adjustors. Fisher Body Division carries on a continuing safety test program on such items as door latches, doors, seat belts, rear view mirrors and brackets, instrument panels and sun visors. Chevrolet Division conducts tests of strength and fatique resistance before parts and components are considered for use in production. Tested items include front suspension units, steering assemblies, brake master push rods, and electrical components.

The improvement of automobiles has been the objective of General Motors automotive testing, and most improvements result in safer cars. Since much remains to be learned about the causes of accidents and injuries, GM is enlarging its testing facilities. A new Safety Test and Development Laboratory and a maneuvering pad as large as 59 football fields are now under construction at the Milford Proving Ground. In addition to its own safety research, GM has sponsored related programs at the Cornell Aeronautical Laboratory, Harvard University, Massachusetts Institute of Technology and Wayne State University. General Motors currently is planning to expand its research in these areas.

- more -

Significant progress has been made over the years in providing customers with safer cars. Car bodies, for example, are much stronger today than they were years ago. Modern welding techniques and fixtures make possible the joining of many pieces into a solid, integral unit. The advantages of advanced metal forming techniques also apply to the chassis frame as well.

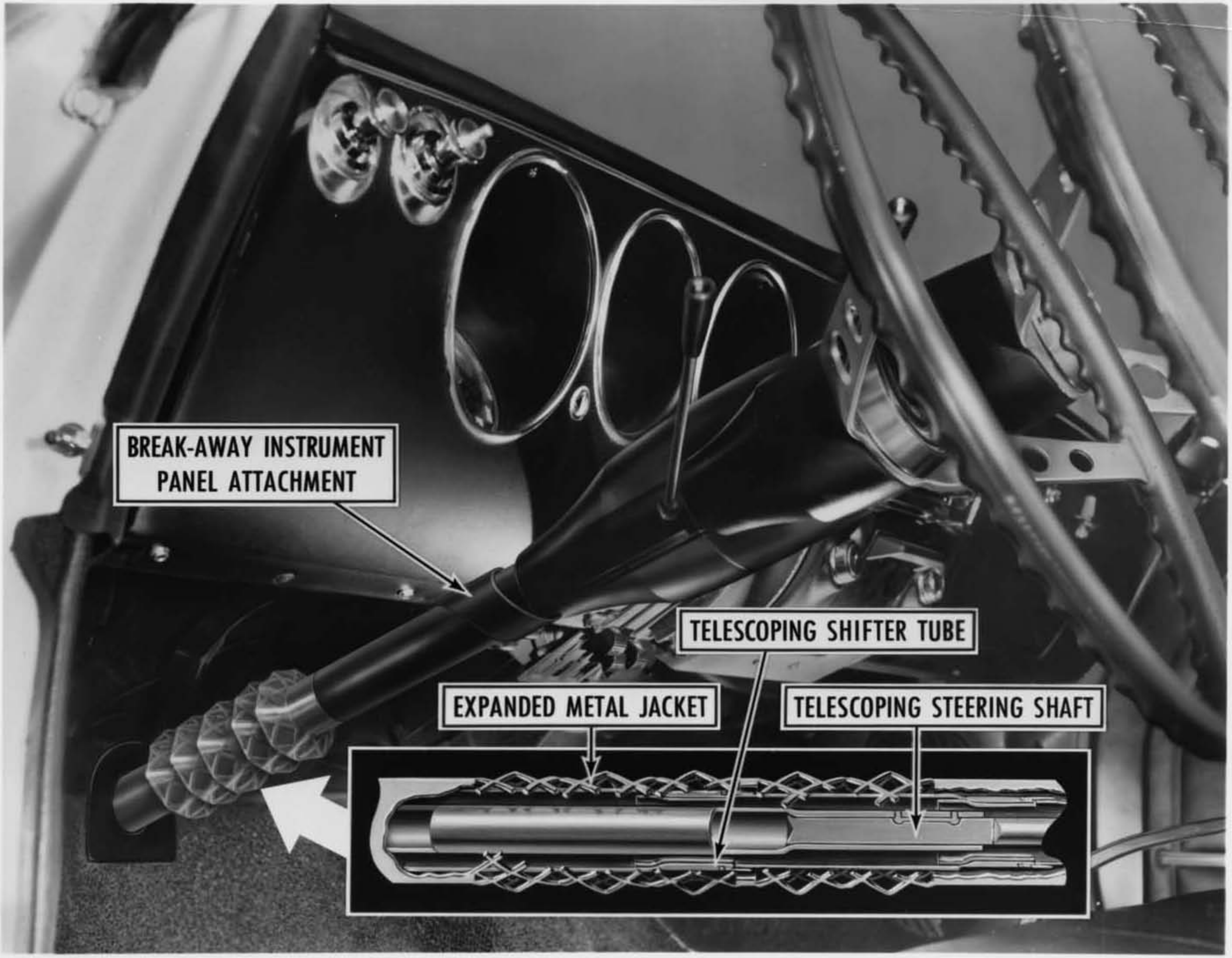
The glass in GM cars also have been greatly improved since safety glass was first introduced in GM cars in 1928. In 1966 models the windshield glass has been made stronger with a new tougher and thicker sheet of plastic between the two panes of glass. This development, based on a long, cooperative program involving GM and the glass companies, has resulted in a glass which nearly doubles the resistance to penetration, thus increasing the safety of occupants in the event of collision.

Improvements in braking and steering are a further contribution to increased safety in GM automobiles. The development of power braking systems, automatic brake adjustors and the dual master cylinder brakes introduced in 1967 all help drivers stop their vehicles in a shorter distance with better control and a greater margin of safety.

Steering systems on GM cars today are more precise and responsive. The availability of power steering and adjustable steering wheels also helps reduce steering effort and provide greater driving flexibility.

The GM 1967 lines represent another step in the evolution of automotive safety progress. Just as these automobiles are the safest yet produced by the Corporation, the knowledge gleaned from continuing research and engineering advances will provide customers with still safer GM cars in the future.

* * *


BREAK-AWAY INSTRUMENT PANEL ATTACHMENT
TELESCOPING SHIFTER TUBE
EXPANDED METAL JACKET
TELESCOPING STEERING SHAFT

SAFETY FIRST -- An important safety feature on all 1967 General Motors passenger cars is the GM energy-absorbing steering column system shown here on a 1967 Chevrolet Camaro. The GM steering column telescopes up to 8-1/4 inches in the event of a severe front-end collision when the force of impact is applied to it at either end. The inset shows in detail important parts of the new safety feature.

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CONTINUING EFFORTS ARE REQUIRED
TO MAKE GM CARS SAFER THAN EVER

General Motors' continuing progress in research and engineering has helped make its 1967 automobiles the safest in the history of the Corporation.

This progress is evident in two of the safety features that are standard in the Corporation's 1967 lines: the GM energy-absorbing steering column and passenger-guard door locks.

In a severe front-end collision, the energy-absorbing steering column compresses at a controlled rate -- up to $8\frac{1}{4}$ inches -- when impact loads are applied at either end. The new steering column is the result of research and development dating back to the late 1950's.

Passenger-guard door locks on all doors help prevent accidental opening should a door handle be tripped inadvertently. This feature is the latest safety development in GM door locks, which over the years have been made stronger and more foolproof to protect occupants in collisions.

Other new or improved 1967 safety features -- there are a total of 29 -- include:

* Folding seat-back latches which lock front seats on two-door models and second seats in station wagons.

* Day-night mirrors with shatter-resistant glass, vinyl clad breakaway base and vinyl edge bezel.

* Window regulator knobs of soft vinyl and with low profiles.

* Padded and energy-absorbing instrument panels.

* Smooth contoured instrument panel knobs.

* Dual master cylinder brakes.

The 29 safety features standard in 1967 GM lines are in addition to safety items of

- more -

prior years. These include front and rear seat belts; back-up lights; outside rearview mirror; dual speed windshield wipers and washer, and improved penetration resistant windshield glass.

While features designed to protect occupants in the event of an accident are important, automotive safety also must be concerned with preventing the accident in the first place.

One way to prevent accidents is to have components do consistently what they are designed to do and to provide this in today's automobiles, General Motors has an extensive testing program at its proving ground facilities at Milford, Mich., and Mesa, Ariz., and at a Pikes Peak, Colo., test site.

At the GM Proving Ground at Milford, for example, more than 4,000 acres and 75 miles of roads provide the most comprehensive installation of its kind in the automotive world. Here major components such as engines, transmissions, brakes, steering and suspension systems are subjected to grueling tests over a variety of roads in all kinds of weather conditions. This testing assists engineers in designing greater reliability into the vehicle. Handling and stability -- two important safety factors -- are evaluated with a battery of sophisticated tools and techniques. For example, a small rocket engine simulates wind gusts to help engineers improve driver control in crosswinds. Other proving ground facilities include a punishing road of smoothly worn granite blocks imbedded in concrete that is ten times tougher on vehicle bodies, frames and suspensions than any secondary road and the "bathtub" and "mudbath," which enable GM engineers to study under actual conditions the splash protection of brakes, seals, air intakes and other parts and components.

Brakes are tested with panic stops at speeds as high as 100 mph, and stopping rates, pedal pressure and pedal travel are measured and plotted automatically with special precision instruments. Steering angle deflections and forces are produced and analyzed in a built-in computer, and recorded automatically with PG developed instrumentation.

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* * *

1908 CADILLAC

1940 CHEVROLET 25 MILLIONTH

1955 CHEVROLET 50 MILLIONTH

1962 PONTIAC 75 MILLIONTH

1967 CHEVROLET 100 MILLIONTH

HISTORIC MILESTONES -- Here are some of General Motors' milestone vehicles. The Cadillac (upper left) was built the year GM was founded. GM's 25 millionth vehicle, a 1940 Chevrolet (upper right), came off the assembly line in Flint, Mich., on January 11, 1940. The 50 millionth vehicle, a 1955 Chevrolet (center left), was produced on November 23, 1954, in Flint. The Corporation's 75 millionth vehicle, a 1962 Pontiac Bonneville (center right), rolled off the line in Pontiac, Mich., on March 14, 1962. GM's 100 millionth vehicle, a 1967 Chevrolet Caprice Custom Coupe (bottom), was produced only five years and five weeks later on April 21, 1967, at the Chevrolet-Fisher Body Assembly Plant at Janesville, Wis.

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INCREASING VALUE SEEN
IN MILESTONE VEHICLES

Besides representing an unprecedented production feat, General Motors' assembly of its 100 millionth vehicle -- a 1967 Chevrolet Caprice Custom Coupe -- serves as an excellent reference point for noting how the value of an automobile has increased with each successive model year.

In fact, this steady increase in value (giving "more car per car"), and the appeal of continuous year to year improvements, have been important factors in closing the gap between various GM million-car milestones.

General Motors had been in business more than 31 years when its 25 millionth car was produced on January 11, 1940. Introduced on this 1940 Chevrolet Deluxe Sedan were sealed beam headlights, a vacuum-power shift for the manual transmission, and a new one-piece "alligator-type" hood. It had an all-steel Body by Fisher and was powered by an 85-horsepower, six-cylinder engine. The car had a wheelbase of 113 inches and was 192¼ inches long, overall.

Less than 15 years later (including time out for no civilian automobile production during World War II), the 50 millionth car -- a 1955 Chevrolet Bel Air Sport Coupe -- rolled from the assembly line on November 23, 1954. It was powered by a brand-new (optional) 162-horsepower Turbo-Fire V-8 engine and Powerglide automatic transmission. The car had a wheelbase of 115 inches, and like all 1955 Chevrolets, featured GM's new panoramic windshield. It was "the first car in the low-priced field to reflect the 'dream car' influence of the GM Motoramas."

Also introduced on the 1955 Chevrolet was an improved ball joint front suspension system and an anti-dive braking control feature. Twelve-volt ignition system and tubeless tires made their debut that year, and a combination air conditioning-heater system was available as an option on Chevrolet V-8 models. Variable speed electric windshield wipers

- more -

replaced vacuum-operated units and Chevrolet extended optional electric window lifts to the rear windows of its cars.

Today, the 100 million mark is reached with the production of a 1967 Chevrolet Caprice Custom Coupe, one of 48 models now being built by the division (the 1955 Bel Air was one of 16 models).

There is little resemblance in terms of appearance, performance or in the safety, comfort and convenience characteristics of the 100 millionth vehicle and predecessor milestone models.

The 1967 model carries 22 optional items, 13 of which weren't available on 1955 Chevrolets. The new milestone car has optional GM Comfortron air conditioning (a heater-defroster unit is standard equipment). Heater-defroster units were extra-cost items on 1955 models. The list of standard equipment on the 1967 model also includes front and rear seat belts with belt retractors in the front seat; energy-absorbing padding over sun visors and the instrument panel; the GM-developed energy-absorbing steering column assembly, body anchor points for shoulder harnesses in the front seat; a dual master cylinder brake system with warning light; four-way hazard warning flasher and a day-night inside rearview mirror.

The 1967 Chevrolet Caprice milestone car has as optional equipment a 275-horsepower Turbo-Fire V-8 engine and Turbo Hydra-Matic, power steering, power brakes with disc brakes in front, power windows and a six-way adjustable front seat. It also carries the optional GM Comfortilt steering wheel, Cruise-Master speed control, Vigilite light monitoring system and an AM/FM stereo radio with stereo tape system.

In addition to the increased value of the vehicles themselves, buyers of today's GM products benefit from greatly improved manufacturer's warranties.

The 1955-model Chevrolet Bel Air (50 millionth GM car) was warranted for 4,000 miles or 90 days, whichever came first. The 1967 model Chevrolet Caprice 100 millionth milestone vehicle carries a 24,000-mile or 24-month warranty on all parts except tires (which are warranted by the tire manufacturer). In addition, the power train, front and rear suspension units, steering mechanism and wheels are warranted for five years or 50,000 miles. Both the

- more -

original and subsequent owners are protected throughout the term of the present General Motors warranty on its passenger cars and light trucks produced and sold in the United States and Canada.

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GM'S 100 MILLIONTH VEHICLE

Following are details concerning GM's 100 millionth vehicle, a 1967 Chevrolet Caprice Custom Coupe, produced Friday, April 21 at Janesville, Wis.:

Nantucket Blue
Blue Interior
Black vinyl roof cover
275 hp., 327 cu. in. Turbo-Fire V-8 engine
Dual exhaust
Turbo Hydra-Matic transmission
Power steering
Power brakes
Power windows
Power seat (6-way)
Appearance guard group
Comfortilt steering wheel
AM/FM radio and stereo
Stereo tape system
Comfortron air conditioning
Front disc brakes
Cruise-Master speed control
Speed warning indicator
Vigilite (light monitoring system)
Soft-ray tinted glass (all windows)
Tissue dispenser
Litter container
Rear bumper guards
Whitewall tires
Strato-back seat

* * *

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MANY GM DIVISIONS WERE INVOLVED
IN TODAY'S MILESTONE EFFORT

Parts and equipment for General Motors' 100 millionth vehicle, a 1967 Chevrolet Caprice Custom Coupe, came from GM divisions and plants around the nation.

Chevrolet Motor Division plants in Bay City, Mich., Buffalo, N.Y., Detroit, Flint, Mich., Livonia, Mich., Massena, N. Y., Saginaw, Mich., Tonawanda, N.Y., and Warren, Mich., were involved.

Fisher Body Division plants participating included those in Cleveland, Ohio, Willow Springs, Ill., Flint, Grand Blanc, Mich., Grand Rapids, Mich., Hamilton, Ohio, Kalamazoo, Mich., Mansfield, Ohio, Marion, Ind., and Pittsburgh, Pa.

GM divisions and their plants which were suppliers included AC Spark Plug, Flint; Central Foundry, Saginaw; Diesel Equipment, Grand Rapids; Delco Moraine, Dayton, Ohio; Delco Products, Dayton, and Rochester, N. Y.; Delco Radio, Kokomo, Ind.; Delco-Remy, Anderson, Ind., and Muncie, Ind.; Frigidaire, Dayton; Guide Lamp, Anderson; Harrison Radiator, Lockport, N. Y.; Hydra-Matic, Ypsilanti, Mich.; Inland Manufacturing, Dayton; New Departure-Hyatt Bearings, Bristol, Conn.; Packard Electric, Warren, Ohio; Rochester Products, Rochester, N. Y.; Saginaw Steering Gear, Saginaw, and Ternstedt, Elyria, Ohio, and Syracuse, N. Y.

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MILESTONES IN MILLIONS
FROM SEPTEMBER 16, 1908
PASSENGER CARS & COMMERCIAL VEHICLES - U.S. ONLY

Vehicles Produced	Date	Elapsed Time
1,000,000	March , 1919	10 Years, 4 Months, 2 Weeks
5,000,000	July 1, 1926	7 Years, 3 Months
10,000,000	July 24, 1929	3 Years, 1 Month
15,000,000	November 30, 1934	5 Years, 4 Months
20,000,000	November 17, 1937	2 Years, 11 Months, 3 Weeks
25,000,000	January 11, 1940	2 Years, 3 Months, 3 Weeks
30,000,000	September 23, 1947	7 Years, 8 Months
35,000,000	November 4, 1949	2 Years, 1 Month , 2 Weeks
40,000,000	April 25, 1951	1 Year , 5 Months, 3 Weeks
45,000,000	April 13, 1953	1 Year , 11 Months, 3 Weeks
50,000,000	November 23, 1954	1 Year , 7 Months, 1 Week
55,000,000	December 22, 1955	1 Year , 1 Month
60,000,000	May 20, 1957	1 Year , 5 Months
65,000,000	March 4, 1959	1 Year , 9 Months, 2 Weeks
70,000,000	September 30, 1960	1 Year , 6 Months, 3 Weeks
75,000,000	March 14, 1962	1 Year , 5 Months, 2 Weeks
80,000,000	April 29, 1963	1 Year , 1 Month , 2 Weeks
85,000,000	May 7, 1964	1 Year , 1 Week
90,000,000	May 14, 1965	1 Year , 1 Week
95,000,000	April 11, 1966	11 Months
100,000,000	April 21, 1967	1 Year, 1 Week

Vehicle Make	Units	Percentage of Total
		%
Buick	13,368,916	13.4
Cadillac	3,483,954	3.5
Chevrolet	58,028,356	58.0
GMC Truck & Coach	2,410,054	2.4
Oldsmobile	10,337,845	10.3
Pontiac	12,296,696	12.3
Miscellaneous	74,179	.1
Total	100,000,000	100.0

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GM ENGINEERING INNOVATIONS
HAVE SET AUTOMOTIVE PACE

From the first General Motors milestone vehicle in 1908 to the 100 millionth GM vehicle built in Janesville, Wis., today one thing has remained constant -- outstanding automotive engineering.

That first GM vehicle was the 1908 Cadillac which was singled out by the Royal Automobile Club of London, England, as the first automobile ever to be awarded the coveted Dewar Trophy -- for interchangeability of parts. The 100 millionth, a 1967 Chevrolet, includes one of GM's most recent engineering innovations, the energy absorbing steering column.

In between is a list of engineering accomplishments that include nearly every component which makes today's automobile such an outstanding mechanism in performance, safety, reliability and value.

Such readily accepted components as the V-8 engine, automatic transmission, all steel bodies, sealed beam headlamps and Diesel engines for truck, rail and marine use are among the accomplishments of GM engineering.

Not a few of these were original ideas; others exemplified wise use of engineering principles well known by the time the automobile appeared on the scene.

Cadillac's recognition in 1908 for its interchangeability of parts was not a new idea, but it was a "first" in the automotive industry.

Three Cadillacs were shipped to England. They were tested, disassembled into a single pile of parts, reassembled and tested. Today this is commonplace, but in 1908 it was an astounding performance because manufacturing techniques were crude by today's standards and tolerances.

In 1910 Cadillac became the first manufacturer to offer closed bodies as standard equipment. And in 1912 it collected a second Dewar Trophy for the first successful electric

- more -

self-starter. It was developed by the late Charles F. Kettering who later became a widely known innovator himself as director of GM Research Laboratories.

By 1914 Cadillac scored another engineering triumph, the first V-type United States production eight-cylinder high speed engine. Historians rightfully cite earlier V-type power plants, but they were confined to custom built vehicles.

In 1932 Oakland, a GM car succeeded by Pontiac, introduced lacquer finish. This pioneered fast drying finishes, and the shortened drying time obviously speeded body production. Another innovation in finishes was achieved in 1959 on all GM cars with the acrylics or Magic Mirror finish which maintained luster and durability without the need of special treatment.

In 1924 GM established its Proving Ground near Milford, Mich., first and long-time predecessor installation of its kind in motor car history. This innovation of testing cars under controlled conditions gave engineers reliable factual data leading to many important developments.

The so-called synchromesh transmission with gear synchronizers was introduced in 1928 by Cadillac and later was adopted by the entire industry. It made shifting gears easier.

GM's Fisher Body Division introduced no-draft ventilation in automobile bodies in 1933, and on all 1934 GM models independent front wheel suspension appeared.

In 1935 GM models made their entry with turret tops, the first one-piece stamped all-steel roofs on closed car bodies.

By 1937 not only did standard transmission GM cars have gearshift levers located on steering columns, but also Oldsmobile had presented the first successful automatic gear changer, a semi-automatic transmission. By the 1940 model year Oldsmobile was on the road with the first completely automatic transmission, Hydra-Matic.

The year 1940 also was noteworthy for another engineering milestone, the standardized sealed beam headlamp. GM participated extensively in this industry-wide headlamp program in the public interest. It greatly improved headlighting for safer night driving.

Shortly after the end of World War II, GM Research Laboratories' long range work with engines and fuels was highlighted by Mr. Kettering's demonstration of a six-cylinder test engine with 12.5-to-1 compression ratio. In effect, this improved both the performance and efficiency of piston engines, taking advantage of the steadily rising octane levels of both standard and premium fuels.

By 1948 both Cadillac and Oldsmobile offered short stroke, large bore, compact overhead valve engines with a particularly rugged design to take advantage of future compression ratio increases. Cadillac's development actually was well underway prior to World War II.

Meantime, Buick introduced the public to Dynaflow, first torque converter type of automatic transmission in passenger cars. Chevrolet in 1950 offered the first torque converter type transmission in its price class.

The industry's first automatic headlight dimmer, the autronic eye, was introduced by Guide Lamp Division and appeared on Oldsmobiles in 1952. A year later Cadillac, Oldsmobile and Buick offered air conditioning units. In 1964 came another air conditioning "first," fully automatic year-around air conditioning from a single control.

Also, in '53 Delco Remy Division's new 12-volt electrical system was installed on Oldsmobiles, Cadillacs and Buicks to improve ignition performance with high compression engines. That was also the year of the Chevrolet Corvette which, at the time of its introduction, was the only production vehicle with a plastic molded body and the first American sports car.

In 1952 and the following year GM pioneered further automatic transmission developments with dual-range Hydra-Matic, Twin-Turbine Dynaflow and the improved Powerglide. These not only improved acceleration and fuel economy for motorists but also provided better engine braking on downgrades.

More recent innovations would include Chevrolet Chevy II, which was introduced in 1961 with such features as "flush-dry" rocker panel ventilation and single-leaf rear springs.

Although overhead cam engines are familiar to racing car designers, Pontiac offered

- more -

a six-cylinder version as an option for 1966, marking another departure from current engineering practice.

And that same model year an even more far-reaching and innovative engineering development was Toronado, Oldsmobile's front wheel drive-vehicle. Front-wheel designs were not new in the United States or Europe, but Toronado's uniqueness lay in its drive system that included an automatic transmission as an integral part.

This automobile also featured many tributary innovations in the design and construction of its chassis, steering system, brakes, transmission drive chain and sprocket. Cadillac's Eldorado, also a front-wheel drive car but unmistakably Cadillac was introduced a year later, 1967.

Other engineering "firsts" have been attributed to GM outside the passenger car field. By developing a highly successful fuel injection system applicable to the two-cycle principle, GM Research stimulated new interest in Diesel power. In effect, this liberated Diesel engine design from ponderous stationary applications to a degree of flexibility and mobility never before achieved.

By 1934 this was dramatized with the first streamlined railroad train powered by an Electro-Motive Diesel. In switcher service, as well as mainline freight and passenger hauling, the nation's railways underwent an engineering revolution by dieselizing their entire systems with a faster, more efficient and more economical power than steam.

Almost simultaneously the Diesel became a workhorse power plant for trucks, buses, boats, submarines, oil derricks, sawmills, and countless other installations. By 1938 GMC Truck & Coach Division was on the road with the first Diesel truck engine.

Perhaps the most effective though least dramatic role of any GM World War II product was that played by GM Diesel engines. They took over numerous jobs on land but their forte was on the sea. They powered huge fleets of ships and landing craft and a great majority of all but the bigger vessels were powered by one or more GM Diesels.

They packed a tremendous amount of power into very little space, and this was particularly vital to submarines. It was equally important in the design of supply vessels because it left more room for cargo. In addition, the Diesel proved both rugged and reliable, so much so that even small landing craft could cross oceans and be ready for instant combat maneuvers.

It has been said that without the GM Diesel engine, the whole strategy of amphibious invasions would have been entirely different.

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PIONEERING IN SCIENCE IS EVERYDAY
BUSINESS FOR GM'S RESEARCH LABORATORIES

Pioneering in a variety of scientific and engineering fields is everyday business for the General Motors Research Laboratories at the Corporation's Technical Center at Warren, Mich., in suburban Detroit.

During its more than 50 years of existence the Laboratories has made major technological innovations in many fields. Operating under the genius of C. F. Kettering, the laboratory in the early days produced such revolutionary developments as the alkyl lead anti-knock compounds and high octane gasolines which save the consuming public some \$8 to \$10 billion per year; Freon, which created the \$1.2 billion refrigerator market; and the locomotive diesel engine, which now saves, and for many years has been saving, the railroad industry \$700 million each year.

The Laboratories has continued in the tradition in which it was started, as primarily a practical, product improvement, problem solving, and trouble shooting activity. However, the technology has become infinitely more sophisticated in all areas. This is apparent by the following areas in which GM Research has made significant progress:

Energy Conversion - GMR has long been engaged in examining various types of energy conversion since they offer the potential for improved efficiency and reduced air pollution. Extensive work is continuing on energy concepts such as the Stirling engine, fuel cells and electric batteries. The three-kilowatt GMR Stirling ground power unit, for example, has recently completed successfully U.S. Army evaluation tests based on noise level, environmental conditions and durability. Another recent achievement was the development and fabrication by GMR of the high performance electric motor drive systems for GM's Electrovair II and Electrovan, the battery and fuel-cell powered vehicles, respectively. These vehicles were demonstrated to the press in October, 1966.

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Air Pollution Research - GM Research Laboratories has done more research on automotive emission problems than any other group in the world. Two tangible results of this research are (1) the use of positive crankcase ventilation devices on all U.S.-produced cars since 1963 and (2) GM Air Injection systems.

The Corporation is aided in its attack on photochemical smog by sophisticated scientific equipment such as industry's first and largest smog chamber; a Long Path Infrared Irradiation Chamber for studying chemical changes in simulated "polluted" atmospheres; and a gas chromatograph facility that can measure the unburned hydrocarbons in exhaust gases to one part in a billion.

Marstressing - GMR's patented Marstressing process is an ingenious method of controlling the residual stress distribution in through-hardened steel ball bearings. This method involves diffusing foreign atoms into the metal surface to harden the ball from the interior outward. When the hardening process reaches the surface, this expansion is opposed by the already hardened interior. The result of this "squeeze" is a highly residual compressive stress near the surface where rolling contact failures normally originate.

Marstressing is backed by GMR innovations in X-ray diffraction techniques and more than two decades of research on residual stress. This process, in combination with a cleaner steel, has helped New Departure Division triple the rated life of its ball bearings.

Transportation Research - An important challenge of relevant concern to General Motors is that of the overall transportation system in the United States and the related problems of traffic safety; adequate highway facilities and mass transit. To help strengthen the Corporation's efforts in this field a new GMR section has been created -- the Transportation Research Department. Its members are using techniques such as systems analysis to bring new understanding of this most complex of social-economic-technological problems.

In a related area the Laboratories is carrying out pioneering studies on the mathe-

- more -

matical description of traffic flow. These analyses are providing new insight into how drivers react to traffic stimuli and interact with other vehicles in traffic. An early outgrowth of these GMR studies was the organization of the first international symposium on the theory of traffic flow, which was held at General Motors Research Laboratories in 1959.

Studies of Engine Bearing Stresses, Materials and Lubricants - Work in this area over the years has led to a progressive improvement in bearings to where present automobile engine loads are five times higher than they were a decade or two ago. In addition to improving bearing designs and materials, it was necessary to greatly improve lubricants, particularly where there was concern with boundary lubrication problems on surfaces such as valve tappets and hypoid gears. Many of these improvements have involved the use of beneficial additives which can make up 25% by volume of some current GM lubricants. The benefits of such work go far beyond the Corporation. For example, GMR specifications for engine crankcase oil for factory fill are used by the oil industry as guide lines in developing new oils for the retail trade as well.

Seal Technology - The development of non-leaking seals is one of the results of a ten-year study program at GM Research Laboratories. These seals, called hydrodynamic, stop leaks by using the pumping action of spiral grooves either in the seal or in the shaft.

A new seal test machine -- the GMR Sealometer -- also is a recent Research Laboratories contribution to this field. The sealometer can be used for either lip seal research and development or for quality control of production seals. In only 10 minutes, this machine provides enough data to establish an acceptance level for a single seal design. Lip seal design is important to the industry because more than 100 million of these simple-looking devices are used annually in cars, trucks and buses to prevent leakage around rotating shafts.

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The new technology resulting from GM research is being adopted by seal manufacturers for automotive use and also for far wider industrial applications.

Research and Development of Gas Turbines - The newest GM regenerative gas turbine engine is the GT-309, a 280-horsepower unit currently undergoing tests in Chevrolet and GMC tandem-axle trucks and in a GMC transit coach. The GT-309 is equipped with Power Transfer, a unique system that improves part-load fuel economy and provides engine braking power equal to the full rated output of the engine. The GT-309 is superior to piston engines in torque characteristics, vibration, noise level, exhaust temperature and odor, and unburned hydrocarbon emissions.

Gas Turbine research and development began at the Research Laboratories nearly 20 years ago. This program was designed for large highway vehicles and other heavy-duty applications. In 1954, a 370-hp nonregenerative gas turbine built by the Laboratories powered America's first gas turbine automobile, GM's experimental XP-21 Firebird (1954). Experimental turbine installations also were made in Firebird II (1955) and Firebird III (1958). Allison Division in 1960 and 1961 delivered 15 prototypes of the GT-305 to military and industrial users for evaluation in heavy-duty vehicles, off-highway equipment, marine installations, and dynamometer installations.

Metallurgy - GMR's metallurgical department provides a steady stream of new processes and new products. New products in this area usually mean new special purpose alloys. An example is the development of a silicon aluminum alloy for lightweight aluminum engines. The introduction of the new aluminum engine in turn brought new competitive pressures to cast iron engine producers. Subsequent cooperative programs between GMR and the divisions led to improvements in sand mold foundry practice that permitted thinner walled castings with corresponding weight reduction.

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AN INSIDE VIEW -- This is what it looks like inside the General Motors Research Laboratories' 300-cubic-foot smog chamber, the only one of its kind in the automobile industry. The chamber is used by scientists at the GM Technical Center in Warren, Mich., to determine how changes in fuel composition, car operation and engine design may affect smog formation. It also is useful in evaluating various exhaust control systems. These 247 special fluorescent lamps inside the stainless steel chamber simulate Los Angeles noonday sunlight. Exhaust from an automobile operated on a dynamometer in an adjoining room is diluted with air and piped into the chamber for irradiation. Along one portion of the chamber are five eye ports where human subjects determine whether the mixture irritates eyes.

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NEWS

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EXPLORING THE FUTURE IS THE
TASK OF GM'S TECHNICAL CENTER

In the more than 10 years of its existence, the General Motors Technical Center has served the Corporation as a fountainhead of scientific inquiry and economic energy.

A workshop for some 5,700 engineers, researchers, stylists, designers, machinists and other specialists, the GM Technical Center occupies a 320-acre site in Warren, Mich., in suburban Detroit. The 30 structures on this site range in size from gatehouses to large laboratory, office and shop buildings.

The people who work in the main buildings have a general mission: explore the future. The simplicity of this statement, however, belies the complexity of the task. This task involves not only improving today's techniques, methods and products, but also scanning the horizons of tomorrow to help chart new courses. GM's specialists, in effect, have the responsibility to keep General Motors ahead in the coming year, through the use of science and technology.

The responsibility to keep GM on the move is divided among four central staff activities: Research Laboratories, Engineering Staff, Manufacturing Staff and Styling Staff. These staffs are organized along the following general lines:

- The Research Laboratories concentrates on long-range projects and studies in the mechanical arts and basic sciences -- chemistry, metallurgy, physics and electronics.
- The Engineering Staff operates service facilities for various GM divisions and specializes in development work on automotive engines, suspensions, automatic transmissions, body structure, ordnance vehicles and other vehicle components.

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- The Manufacturing Staff works on engineering studies and experimental, exploratory projects to improve manufacturing techniques and processes. Their objectives are to increase the quality of GM products and plant efficiency and lower the cost of GM products.

- The Styling Staff serves as a central styling and design unit by maintaining separate studios for each of GM's automotive divisions -- Chevrolet, Pontiac, Oldsmobile, Buick, Cadillac and GMC Truck & Coach. Other styling groups serve Frigidaire Division and other non-automotive GM divisions. They also create displays and exhibits, such as those that were shown in the GM Futurama at the New York World's Fair.

GM employes at the Technical Center have an attractive atmosphere in which to work -- an atmosphere designed to help stimulate creative thinking. The exterior of the area is enhanced by large sections of lawn, flanked by attractive shrubs and a variety of trees. The various building groups are located along three sides of a 22-acre artificial lake. The buildings -- none higher than three stories -- have the clean, functional lines of contemporary architecture, with colorful glazed masonry end walls and structural steel framing that emphasizes large glass areas for natural lighting.

On its architectural merits alone, the Technical Center has created interest of international scope. The men who conceived it visualized a facility not only attractively housed and maintained but also intelligently planned for its purpose -- the promotion on behalf of the Corporation of the mechanical arts, science and styling.

The Technical Center is as practical as it is attractive. Underground tunnels connect major building groups. Large parking zones are situated beside each building group, but are screened by trees and shrubbery. Along the eastern border of the site is a one-mile check road with turnaround loops at each end -- a handy means of giving engineers quick answers to questions that may develop with prototype models, usually prior to comprehensive testing at GM Proving Grounds.

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The Center's facilities, however, are only part of the story, as the late Charles F. Kettering remarked in 1945 at a luncheon during which plans for the Technical Center were announced.

Mr. Kettering, who was then vice president in charge of Research Laboratories, explained:

"The most important factor has not been overlooked -- the men to use these new facilities -- the men who can make ideas grow into material things. We know the problems of the future are going to require for their solution not only the best facilities but the ablest men to use them intelligently."

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THE MOTOR IS AT THE HEART
OF MOST OF GM'S PRODUCTS

The name "General Motors" is truly descriptive of the business of the Corporation, for a motor is at the heart of virtually everything GM makes.

Although primarily a manufacturer of passenger cars and trucks, GM produces a wide range of other products for use in the home, on the job and in defense and space programs. Motors are used in many of these products.

The scope of use of these products is reflected in GM's 1966 commercial nonautomotive sales of $1,625 million which set a new high. The Corporation's participation in defense and space programs involved about 30 GM divisions with defense sales of $552 million in 1966 and several were engaged in production as well as research and development.

For use in the home, GM's Frigidaire Division manufactures a broad line of household appliances. These products include refrigerators, freezers, washers, dryers, ranges, dishwashers, food waste disposers and room air conditioners.

Scores of GM products are employed "on the job." These include: Diesel engines for marine, industrial, petroleum, transportation, military and construction equipment use from Detroit Diesel Engine Division; Diesel locomotives and portable generating plants from the Electro-Motive Division, and off-the-highway equipment for moving earth, rock, coal, ore and timber from the Euclid Division.

In the space program, AC Electronics Division is supplying the vital guidance and navigation systems for the Apollo space vehicles which will transport three astronauts to the moon and back. The Division is the prime con-

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tractor for the inertial guidance systems in the Titan III-C space booster, the United States Air Force's "workhorse" vehicle in space research and development, and Titan II -- America's most powerful intercontinental ballistic missile.

AC Electronics also engages in the development and production of advance guidance and navigation components and systems and electronic control systems for land and sea vehicles, missiles, space boosters and spacecraft and future military and commercial aircraft.

In defense, the Allison Division produces turboprop engines which are used entensively in military cargo, anti-submarine and reconnaissance aircraft and is developing and will produce the TF41 turbofan jet engine. The Division is also developing a turbojet lift engine for use in vertical rising aircraft and is engaged in the production of the M109 self-propelled howitzer and the M551 General Sheridan armored reconnaissance airborne assault vehicle. Allison is also producing pilot models of the new Main Battle Tank in a joint United States-Federal Republic of Germany Program. AC Electronics is developing a computerized weapons control system for the Main Battle Tank.

*   *   *

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NEWS

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SUPPLIERS ARE AN IMPORTANT LINK
IN GM'S PRODUCTION OPERATIONS

The interdependence of business and industry, both large and small, is aptly demonstrated as General Motors observes the production of its 100 millionth vehicle in the United States.

During the past year, more than 36,000 suppliers of goods and services contributed to the continuing performance of GM and its divisions. Products and services were supplied by businesses and industries in all 50 states, the District of Columbia, Puerto Rico, and Canada.

The extent and the importance of this mutuality of interest is evident in a breakdown of statistics. Fifty per cent of the suppliers of goods and services to GM's activities in the United States employed no more than 25 people, while 28 per cent employed less than 100 people and 14-1/2 per cent employed less than 500 people.

The continued relationship between GM and its suppliers is of paramount importance to the Corporation and its divisions. Through this constant business contact emerges quality products and performances by suppliers and the meeting of manufacturing and assembly schedules by GM. More than 2,670 suppliers have dealt regularly with General Motors more than 31 years and more than 3,780 have been regular suppliers between 21 and 30 years. Nearly 8,000 have had GM as a regular customer between 11 and 20 years.

During the year 1966 GM paid 47 cents of each dollar received to its suppliers for a total dollar value of $9,565,000,000.

While GM has been expanding to meet the needs of the motoring public, its supplier organization has expanded in equal proportions. For the past five years approximately 1,000 new suppliers have been added annually to the General Motors list of those supplying goods or services.

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GM's supplier lines stretch all the way from bustling industrial centers to small communities which obtain their products directly from the farmer's fields. Corncobs, used for polishing materials in tumbling machines, are one such item. From the giant industrial centers of Akron come rubber and tires; from Pittsburgh and Gary, Ind., steel; from Toledo, glass, and from many small plants such items as fasteners and small plastic knobs for assembly purposes.

Cloth manufacturers provide not only seat cover material but also baby diapers used for polishing cloths.

GM's Delco Radio Division in Kokomo, Ind., for instance, uses fishbowls upside down to protect small parts and materials from dust. Hair dryers are used by Delco Radio to carry away heat and fumes from certain soldering operations. Tennis balls become float valves in radio speaker cone-making machines.

Delco Radio and other divisions have found that plastic catsup bottles are "just the ticket" for dispensing lubricants in various manufacturing operations.

Clothespins are used by Delco Radio to suspend cords of electric soldering irons and hypodermic needles to inject minute quantities of liquid into certain assemblies.

GM's Packard Electric Division in Warren, Ohio, coats battery straps with oleomargarine to prevent acid corrosion and also uses quantities of handy cellulose dishmops as lubricant applicators.

The Chevrolet Grey Iron Foundry at Saginaw, Mich., uses wetted glass marbles as "catchers" in dust and lint collectors.

Some of the other unusual products at the foundry include talc to make a "mudding" compound for patching cores in casting operations and molasses to sometimes mix with water in sand mold-making.

The Chevrolet Transmission plant in Saginaw uses fabric dyes for coloring nylon speedometer gears with different numbers of teeth for easy identification in assembly.

* * *

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NEWS

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GM'S 30 TRAINING CENTERS PROVIDE
INSTRUCTION FOR SERVICE PERSONNEL

More than 39,700,000 cars and trucks of the 100 million built by General Motors since the corporation was organized on September 16, 1908, are still operating on the streets and highways of the United States.

Service is the key word in the continued functioning of these vehicles.

To enable more than 14,000 franchised dealers to provide the best repair service available in the industry, General Motors today operates 30 training centers in the United States to give dealers' automotive technicians instruction in modern, efficient methods of service operations.

The program of instruction is but one phase in GM's continuing effort to produce and properly maintain highest quality passenger cars and commercial vehicles. GM's quality control and reliability programs begin at the engineering level and carry through manufacturing (whether it be a GM plant operation or an outside supplier), to assembly and eventually to the dealership where customer satisfaction is a paramount concern.

The GM warranty of passenger cars for 24 months or 24,000 miles on all parts of the vehicle except the power train, wheels, suspension and steering mechanism, which are warranted for five years or 50,000 miles, is the result of the quality and reliability programs which have led to GM's "Mark of Excellence" insignia affixed to all vehicles.

General Motors training centers are strategically located throughout the United States so dealer service technicians can attend classes in all phases of service and repair work from motor tune-up to body bumping and painting.

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More than 25,750,000 hours of instruction have been given to more than 1,450,000 registrants in the 30 training centers since they were opened 13 years ago. In 1966, 116,000 registrants received 2,425,000 hours of instruction in the latest and most efficient methods of service operations.

The typical training center has eight classrooms with GM's car and truck divisions providing an instructor to teach an average of no more than 10 automotive technicians. In addition, each training center has an auditorium, cafeteria and kitchen.

Classes for experienced technicians begin just prior to new model introduction so engineering innovations can be explained and instruction in service and maintenance provided before the vehicles are sold by dealers.

Other classes follow throughout the year with two special programs for new mechanics. One program for high school and vocational school graduates teaches the simple fundamentals of dealer service operations. A second is designed to upgrade dealer personnel who have shown an aptitude in service activities but have had no specific course of instruction. This year more than 2,700 service technicians were added to total dealer service personnel through these two programs.

Shop classrooms are used by Chevrolet, Pontiac, Oldsmobile, Buick, Cadillac, GMC Truck & Coach, Fisher Body and United Motors Service divisions. In each divisional area the latest in mechanical tools and equipment is provided for use by the technicians and the divisional instructors.

* * *

NEWS
........from CHEVROLET MOTOR DIVISION

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CHEVROLET STATISTICS

Here are some significant facts about Chevrolet Motor Division of General Motors:

Established: Nov. 3, 1911, by W. C. Durant

Became a GM division: 1918

General Manager: E. M. Estes

Manufacturing Plants: Twenty-four, located in Bay City, Mich.; Buffalo, N. Y.; Cleveland (2), O.; Detroit (2), Mich.; Flint (4), Mich.; Indianapolis, Ind.; Livonia, Mich.; Massena, N. Y.; Muncie, Ind.: Saginaw (4), Mich.; Toledo, O.; Tonawanda (3), N. Y., St. Louis, Mo., and Warren, Mich.

Assembly Plants: Thirteen, located in Atlanta, Ga.; Baltimore, Md.; Flint, Mich.; Framingham, Mass.; Janesville, Wisc.; Kansas City, Mo.; Lordstown, O.; Los Angeles, Calif.; Norwood, O.; St. Louis, Mo.; Tarrytown, N. Y.; Ypsilanti, Mich.; and Bloomfield, N. J.

Total Employment: More than 110,000

Makes: Forty-eight different models in six passenger car lines, including Chevrolet, Chevelle, Camaro, Chevy II, Corvair, Corvette, plus wide variety of commercial vehicles.

Industry "firsts": Valve-in-head engine, bonded brake linings, automatic transmission, panoramic windshield, ball-race steering, electric starter, headlight dimmer foot switch, power steering, power brakes and others.

Record Production: 3,207,178 vehicles in 1965.

4-17-67

NEWS
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FOR RELEASE IMMEDIATELY

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CHEVROLET-JANESVILLE HISTORY

JANESVILLE, Wis. -- World War I, which revolutionized America's modes of transportation, had just ended when General Motors staked out an industrial claim here.

But it was not until a few years later that any GM cars were produced at what is now the Chevrolet-Fisher Body assembly plant.

Long since recognized as one of the finest in the GM family, the Janesville facility first was geared to produce Samson tractors and trucks on the site of the old Janesville Machine Co.

The year was 1918 when William C. Durant, financial wizard and then president of GM, decided the time was ripe for GM's entry into the farm machinery field and chose Janesville as the place to do it.

After purchasing the Janesville Machine Co. and merging it with the simultaneously-acquired Samson Tractor Co. of Stockton, Calif., GM set up shop on a large tract of land in the south section of town.

Chevrolet, organized in 1911 by Durant, became a member of the GM family at about the same time.

Samson tractor and truck production began in Janesville in 1920 after proper plant facilities were installed. Janesville's population at that time was about 13,000.

But the tractor-building venture was short-lived, and the plant was closed for "economic reasons" in 1922.

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Considered an ideal location for a Chevrolet assembly line, the plant was reopened a short time later and a Fisher Body plant was built adjacent to it.

The first Chevrolet rolled off the line in February 1923 signaling the beginning of a long "partners in progress" relationship between Chevrolet and Janesville.

The plants quickly became two of the three chief "bread and butter" sources for many Janesville area residents.

Chevrolet alone had 543 hourly workers and 118 salaried employes in its first year of operation at Janesville. This compares with about 2,400 hourly workers and 500 salaried workers today.

In its first year of operation, Chevrolet-Janesville produced 42,509 vehicles -- a mere fraction compared to the record output of more than 316,000 units in 1965.

Plant expansions and modernization programs have continued through the years to help boost production capabilities and raise the quality of output rarely matched elsewhere.

By June 3, 1925, just over two years after entering the passenger car field, Chevrolet-Janesville had produced its 100,000th vehicle.

Other production milestones soon followed.

The plant produced its 500,000th vehicle in 1929 and the 1,000,000 in 1935. Had it not been for the Great Depression and a forced shutdown, the million-milestone would have been reached even sooner.

After the two sister plants closed on Sept. 17, 1932, many of the employes got interim jobs producing cars before the eyes of spectators at a model plant at the Chicago World's Fair.

When the truck line was opened again on Dec. 5, 1933, the community celebrated. Passenger car production followed.

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Except for a six-week-long strike in 1937, operation of the two plants continued normally until America's entry into World War II.

The plants produced cars until the existing stock supplies were exhausted in January, 1942, and they could be converted to shell production under the direction of GM's Oldsmobile Division.

More than 16 million shells were produced at Janesville during the war, with employment at times as high as 2,500.

The plants were reconverted after the war to produce cars and trucks, but another strike that began Nov. 21, 1945, kept them closed for 112 days.

After accord was reached, the plants resumed normal production, and soon achieved another production milestone.

The 2,000,000th Chevrolet produced at Janesville rolled off the line in 1948, followed five years later by the 3,000,000th.

Meanwhile, a night shift had been added in 1953, adding many workers to the GM payroll. A second shift was added to truck assembly operations in 1963.

The 4,000,000th vehicle was produced in 1959 and the 5,000,000th was made in 1963.

Annual production figures at the Janesville plant have enhanced its industrial stature.

More than 267,000 cars and trucks were built at the plant in 1966, boosting its production since 1923 to more than 5,960,000 units.

Production was 316,000 in 1965, 268,000 in 1964, 302,000 in 1963 and 263,000 in 1962.

Chosen to produce GM's 100 millionth United States-built vehicle on April 21, 1967, Chevrolet-Janesville attracted the eyes and ears of the world. Not bad for an ex-tractor builder.

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FISHER BODY DIVISION
GENERAL MOTORS CORPORATION
WARREN, MICHIGAN
JEFFERSON 9-5000
Extension 3141

NEWS

From
Public Relations Director

FOR RELEASE -- IMMEDIATELY

FISHER BODY DIVISION FACTS

Here are some significant facts about the Fisher Body Division of General Motors:

Established:	1908 by the Fisher Brothers
Became a GM division:	1926
General Manager:	Kenneth N. Scott
Manufacturing Plants:	Thirty-five in 27 cities, including 13 fabricating plants, 18 assembly facilities and four engaged in tooling, engineering and research. Plant cities are Atlanta, Ga.; Baltimore, Md.; Cleveland, O., Euclid, O.; Flint (2), Mich.; Framingham, Mass.; Janesville, Wis.; Kansas City, Mo.; Lansing, Mich.; Lordstown, O.; Detroit (4), Mich.; Warren (2), Mich.; Los Angeles, Calif.; Norwood, O.; Pontiac, Mich.; St. Louis, Mo.; Tarrytown, N. Y.; Ypsilanti, Mich.; Willow Springs, Ill.; Grand Blanc, Mich.; Grand Rapids (2), Mich.; Hamilton, O.; Livonia, Mich.; Mansfield, O.; Marion, Ind.; Pittsburgh, Pa.; Kalamazoo, Mich.; and Tecumseh, Mich.
Total Employment:	Average of 95,000
Makes:	Bodies for all GM car lines, including Chevrolet, Pontiac, Oldsmobile, Buick and Cadillac.
Automotive "firsts":	No-draft ventilation, turret top, unisteel construction, hardtop engineering, safety interlock for doors and others.
Record Production:	During 1966 model year, Fisher Body produced 4,380,000 bodies.

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GENERAL MOTORS CORPORATION
WARREN, MICHIGAN
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NEWS

From
Public Relations Director

FOR RELEASE --- IMMEDIATELY

WARREN, MICH. -- The Fisher Body plant in Janesville, Wis., is an important link in a production chain that involves a network of 35 fabricating and assembly plants in 27 American cities. The activities in the plant represent one of the production miracles of modern industry.

Fisher Body's function -- the production of bodies for General Motors cars -- requires over 35,000,000 square feet of floor space and the services of 95,000 people. The Janesville facility boasts over 600,000 square feet of space and has an average employment of 2,710 people.

Perhaps the simplest description of the automobile body is that it is the passenger area, the part you ride in. It extends from the front of the passenger compartment to the rear bumper.

A new model automobile requires a tremendous amount of skill and know-how to put it on the road. The job of turning out a new body takes years of detailed planning and the best efforts of thousands of highly skilled craftsmen.

Actually production in the plants is an exciting part of this story because it is the climax of many complex programs

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devoted to planning, designing, engineering and testing -- all of which must precede the building of Body by Fisher for General Motors cars.

The idea for the new car is born as a result of the blending of the thought of each of the passenger car divisions that will manufacture and market the new model and the Styling Section where the exterior surfaces and parts of the body are designed from an appearance standpoint.

It may seem unusual that the Fisher Body story begins with what has the appearance of a finished product. Actually it is a clay model, a full-size three-dimensional prototype of the new car design. This is the model whose contours and outward appearance must be duplicated in steel in large volume.

The clay model and the styling drawings are sufficiently accurate to establish the design. However, for production purposes, extremely accurate three-dimensional drawings must be developed for every sweep, contour and detail. The magnitude of this job is further increased by the fact that Fisher Body builds more than 160 different body models each year. Each style

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has approximately 4,000 parts with every part requiring individual attention and testing.

Fisher Body designers and draftsmen begin a new design by laying out the surface of the outside of the body to match the styling drawings and clay model. After the outer shell of the body has been surfaced, drawings are made of the inner surface, hardware, reinforcements and seats. All lines which eventually describe the appearance, structure and mechanical devices of the automobile body are shown on full-size drawings called master drafts. Every part of the body, from the smallest screw to the large roof panel, must appear on one of these master drafts.

While this layout work is progressing, design problems are constantly arising. To aid in solving these design problems, full-size wood, metal, plastic or clay models are made to show various structural features.

Working models are made by hand for all parts of the body -- for nothing can be left to chance. The handles, locks and window mechanisms for the doors must be designed and fitted. The shape, location and application of all weatherstripping must be accurately determined. Every piece of interior and exterior hardware and trim must be properly located and a method

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developed for its installation. The specifications and shape of the laminated safety plate glass must be calculated and provision made for its exact fit to the body openings. Every other part of the body gets the same attention.

In addition to all this, materials which go into the new body are subjected to a series of abusive tests to make sure that they measure up to previously established requirements. To mention a few -- fabrics for the interior of the body are subjected to wear and fade tests; metals are analyzed with the use of a spectroscope; paints are tested for their durability, and their fade and chalking characteristics; weld layouts are analyzed for strength; "test bodies" are made by hand to determine the strength of the overall structure.

While the drawing and testing is taking place, still other skilled craftsmen take the first intricate steps in hand-making what are called "tools and dies". Tools and dies permit great machines to shape sheets of steel for the new body. All designs are reviewed with die and production engineers to make sure they can be efficiently and economically produced. At least one part of dies must be made to stamp out every single sheet metal part.

To make the dies for forming a part from sheet metal, a wooden model is made to the exact shape and size of the part.

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Of course, wood is too soft to shape steel, so the problem becomes one of reproducing the shape of the part in the form of a steel die. To do this, a plaster cast is made by hand using the wood model as a pattern. From the plaster cast, the final form is fashioned from firm, tough plastic. When completed, the plastic unit is fastened solidly on a huge profiling machine. This machine performs an operation much like the small key-copying machines in hardware stores that cut out a new key by following the profile of the old key. The sensitive probing finger of the giant machine is moved across the surface of the plastic model of the part. In an exact duplication of the motion of the finger, a cutting tool below sculptures a piece of solid steel that eventually becomes the die that will itself shape the sheet steel for part of the new body.

When the steel die is removed from the profiling machine, it goes to the hands of individual craftsmen for the infinitely skilled smoothing-up operation no machine can be taught to do. Here the human eye catches a reflection out of place on a surface that should be liquid smooth. A sensitive human hand actually feels an imperfection the eye cannot see and removes it with a hand tool. At this point, one false motion could do irreparable damage. Making dies match perfectly is more of an art than a craft.

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Visualize sheets of steel as they are fed into a pair of dies mounted in an enormous press. Each time the press closes its huge jaws, with hundreds of tons of pressure, another sheet of steel has taken its first step toward becoming a part of an automobile body.

But the making of dies for stamping out the metal parts is only part of the job. It is the responsibility of a group of men called production engineers to determine how the parts can be put together efficiently. These men create the design for equipment known as jigs and fixtures that will perform the task of assembling a body with precision and speed. This group of skilled craftsmen go so far as to set up a trial assembly line which they call the "pilot line". The pilot line permits the checking of tooling, design and assembly of the new body so that all problems can be worked out before actual production.

And so, after months of preparation to insure quality craftsmanship, the plants ready themselves for production of the new automobile body. Thousands of railroad cars begin to roll on a nation-wide network of track between the suppliers, the fabricating plants and the assembly plants. In an average year, 4½ billion pounds of steel, 325 million pounds of glass, 17 million pounds of aluminum, 95 million pounds of rubber,

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three million pounds of copper, 70 million pounds of lead and zinc alloys, 195 million pounds of fabrics, over one million pounds of leather, and 290 million pounds of miscellaneous materials are on the move to Fisher Body plants.

The fabricating plants swing into action and stamp out the body parts with their huge presses. The assembly plants, upon receiving the parts, begin putting them together.

Each body is erected on a rigid two-ton base of steel with its sides formed and held absolutely true by heavy, yellow-painted jigs to make certain that everything fits to perfection. Various types of portable welding guns are swung into position and the parts suddenly become fused into one solid unit.

And so the bodies take form.

A thorough rustproofing protects them inside and out.

A great deal of attention and skill is given to sound-proofing. Twenty-five different kinds of sound-deadening and insulating materials are placed in each body to provide for a quieter, more comfortable ride. These materials are selected with infinite care by highly specialized sound engineers who employ the use of elaborate electronic instruments to detect and minimize body noises.

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The application of several coats of primer-surfacer provides a base for the color coats of lacquer. To insure a top quality finish, the final coat of primer-surfacer is wet-sanded by hand.

Soon the bodies take on the color that brings them to life -- the color of lacquers baked long and hard.

After the glass is installed the bodies are given their baptism. Literally tons of water are jet-sprayed at them under high pressure from every direction to make certain they are leakproof.

With the careful fastening of the hardware and the installation of the interior appointments, the body is finally complete.

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